Honeywell Safety and Productivity Solutions

IM14

FCC 15.247:2018

FCC 15.207:2018

902-928 MHz FHSS RFID Transceiver

Report # INMC1093

NVLAP LAB CODE: 200629-0

CERTIFICATE OF TEST

2017-1-25

Last Date of Test: March 21, 2018
Honeywell Safety and Productivity Solutions
Model: IM14

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2018	ANSI C63.10:2013
FCC 15.247:2018	

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
7.5	Duty Cycle	Yes	Pass	
7.8.2	Carrier Frequency Separation	Yes	Pass	
7.8.3	Number of Hopping Frequencies	Yes	Pass	
7.8.4	Dwell Time	Yes	Pass	
7.8.5	Output Power	Yes	Pass	
7.8.6	Band Edge Compliance	Yes	Pass	
7.8.6	Band Edge Compliance - Hopping Mode	Yes	Pass	
7.8.7	Occupied Bandwidth	Yes	Pass	
7.8.8	Spurious Conducted Emissions	Yes	Pass	
11.10.2	Power Spectral Density	No	N/A	Not required for FHSS devices.

Deviations From Test Standards

None

Approved By:

Rod Munro, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

2018.2.20

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

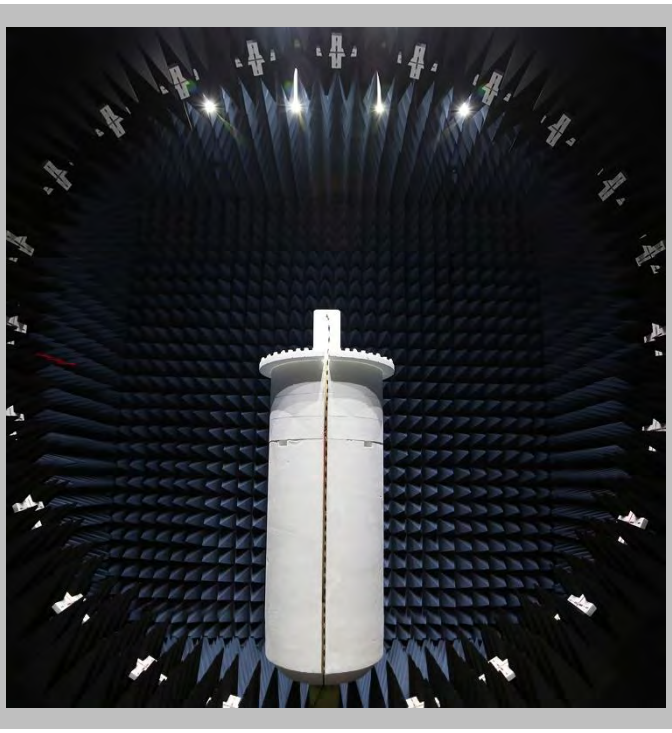
SCOPE

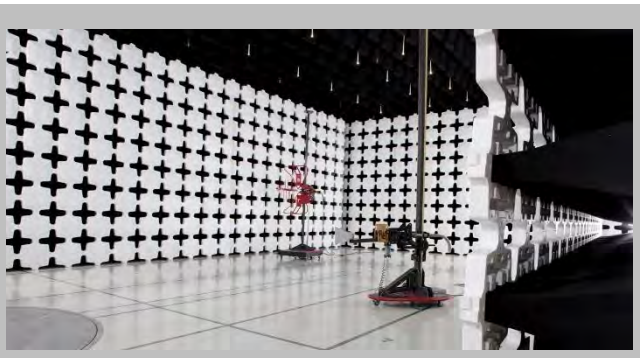
For details on the Scopes of our Accreditations, please visit:
http://portlandcustomer.element.com/ts/scope/scope.htm
http://gsi.nist.gov/global/docs/cabs/designations.html

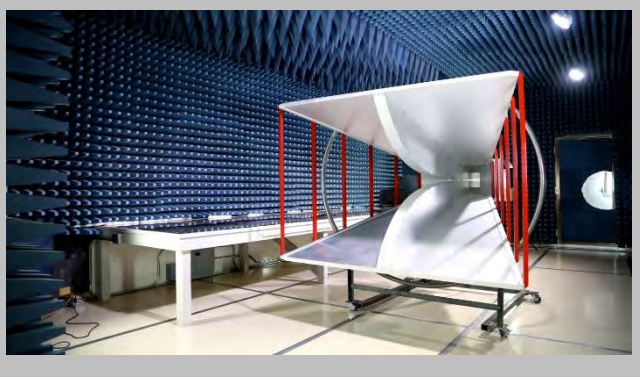
FACILITIES

2017.9.15

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada					
2834B-1, 2834B-3	2834E-1, 2834E-3	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

TMU.2015.07.10

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

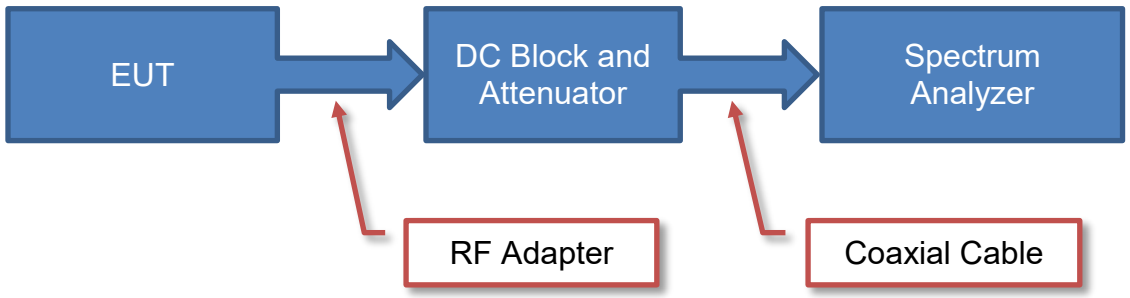
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

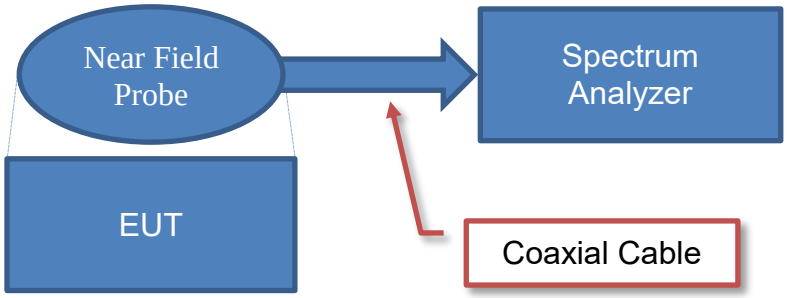
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Test Setup Block Diagrams

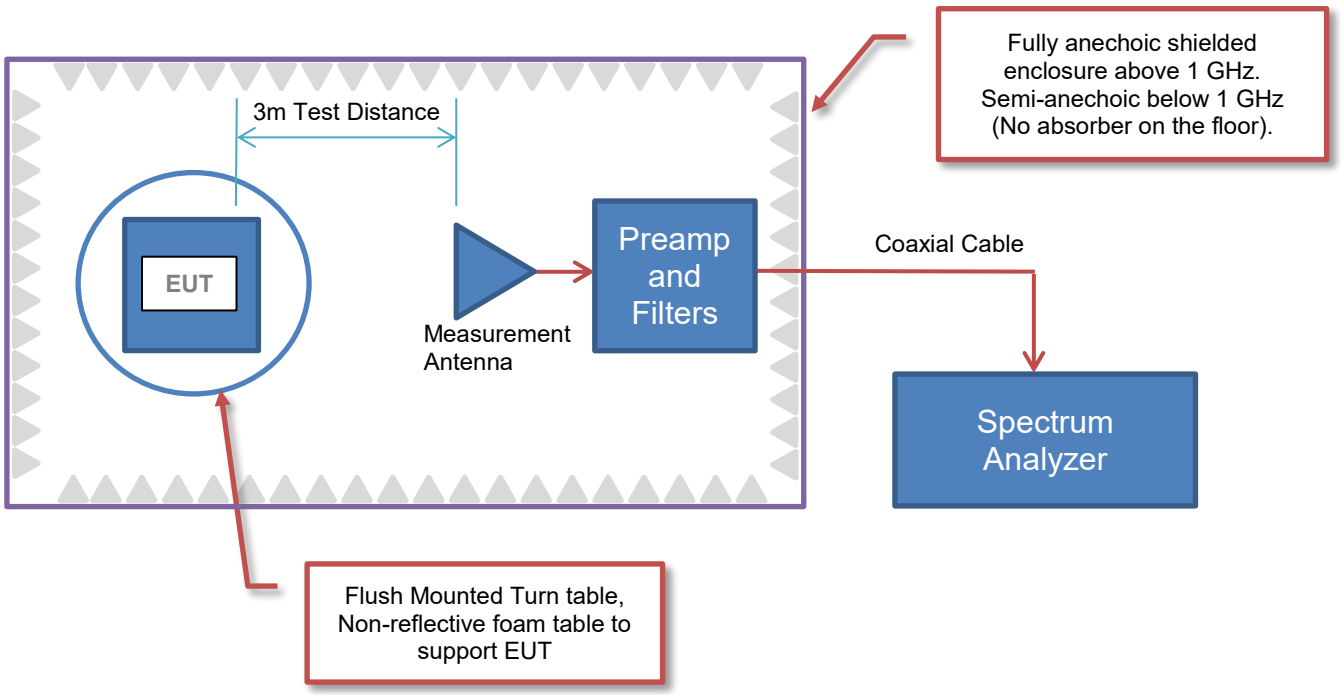
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Honeywell Safety and Productivity Solutions
Address:	16201 25th Ave W
City, State, Zip:	Lynnwood, WA 98087
Test Requested By:	Sean MacKellar
Model:	IM14
First Date of Test:	January 5, 2018
Last Date of Test:	March 21, 2018
Receipt Date of Samples:	January 5, 2018
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
RFID reader operating in the 915 MHz band (902.75 - 927.25 MHz) with one modulation types: EPC Gen 2 (PRASK). The RFID reader utilizes a Frequency Hopping Spread Spectrum (FHSS) radio operating with up to +36 dBm EIRP. The EUT has four antenna ports.

Testing Objective:
Seeking to demonstrate compliance under FCC 15.247 for operation in the 902-928 MHz Band.

CONFIGURATIONS

Configuration INMC1093- 1

Software/Firmware Running during test	
Description	**Version**
JRFID App	2.24

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RFID Radio Module	Honeywell Safety and Productivity Solutions	IM14	FCC Test Unit 1

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Dell	PP18L	SAC-TEST005
AC Power Adapter (EUT)	Phihong	PSAC3OU-120L6	None
AC Power Adapter (Laptop)	Dell	PA-1650-05D2	SAC-TEST

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Ethernet	No	2.0m	No	Laptop PC	RFID Radio Module
DC Power (EUT)	No	1.8m	No	AC Power Adapter (EUT)	RFID Radio Module
AC Power (EUT)	No	1.7m	No	AC Mains	AC Power Adapter (EUT)
AC Power (Laptop)	No	1.5m	No	AC Mains	AC Power Adapter (Laptop)
DC Power (Laptop)	No	2.0m	Yes	AC Power Adapter (Laptop)	Laptop

CONFIGURATIONS

Configuration INMC1093- 2

Software/Firmware Running during test	
Description	**Version**
JRFID App	2.24

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RFID Radio Module	Honeywell Safety and Productivity Solutions	IM14	FCC Test Unit 1

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
11dBic Panel RCP Antenna	Huber Suhner	1309.56.0001	00179
POE Injector	PowerDsine	9001GR	None
GPIO Breakout Box	Intermec	None	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Dell	PP18L	SAC-TEST005
AC Power Adapter (Laptop)	Dell	PA-1650-05D2	SAC-TEST

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Ethernet	No	2.0m	No	Laptop PC	RFID Radio Module
AC Power (Laptop)	No	1.5m	No	AC Mains	AC Power Adapter (Laptop)
DC Power (Laptop)	No	2.0m	Yes	AC Power Adapter (Laptop)	Laptop
RF Cable	Yes	9.0m	No	RFID Radio Module	Antenna
DC Power	No	1.0m	No	DC Mains	RFID Radio Module
GPIO Cable	No	2.0m	No	RFID Radio Module	GPIO Breakout Box

CONFIGURATIONS

Configuration INMC1093- 3

Software/Firmware Running during test	
Description	**Version**
JRFID App	2.24

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RFID Radio Module	Honeywell Safety and Productivity Solutions	IM14	FCC Test Unit 1

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter (EUT)	Phihong	PSAC3OU-120L6	None
11dBic Panel RCP Antenna	Huber Suhner	1309.56.0001	00179
GPIO Breakout Box	Intermec	None	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Dell	PP18L	SAC-TEST005
AC Power Adapter (Laptop)	Dell	PA-1650-05D2	SAC-TEST

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Ethernet	No	2.0m	No	Laptop PC	RFID Radio Module
DC Power (EUT)	No	1.8m	No	AC Power Adapter (EUT)	RFID Radio Module
AC Power (EUT)	No	1.7m	No	AC Mains	AC Power Adapter (EUT)
AC Power (Laptop)	No	1.5m	No	AC Mains	AC Power Adapter (Laptop)
DC Power (Laptop)	No	2.0m	Yes	AC Power Adapter (Laptop)	Laptop
RF Cable	Yes	9.0m	No	RFID Radio Module	Antenna
GPIO Cable	No	2.0m	No	RFID Radio Module	GPIO Breakout Box

CONFIGURATIONS

Configuration INMC1093- 4

Software/Firmware Running during test	
Description	**Version**
JRFID App	2.24

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RFID Radio Module	Honeywell Safety and Productivity Solutions	IM14	FCC Test Unit 1

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
11dBic Panel RCP Antenna	Huber Suhner	1309.56.0001	00179
POE Injector	PowerDsine	9001GR	None
GPIO Breakout Box	Intermec	None	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Dell	PP18L	SAC-TEST005
AC Power Adapter (Laptop)	Dell	PA-1650-05D2	SAC-TEST

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power (Laptop)	No	1.5m	No	AC Mains	AC Power Adapter (Laptop)
DC Power (Laptop)	No	2.0m	Yes	AC Power Adapter (Laptop)	Laptop
RF Cable	Yes	9.0m	No	RFID Radio Module	Antenna
AC Power (EUT)	No	1.8m	No	AC Mains	POE Injector
Ethernet	No	1.5m	No	POE Injector	RFID Radio Module
Ethernet	No	2.0m	No	Laptop PC	POE Injector
GPIO Cable	No	2.0m	No	RFID Radio Module	GPIO Breakout Box

CONFIGURATIONS

Configuration INMC1093- 5

Software/Firmware Running during test	
Description	**Version**
JRFID App	2.24

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RFID Radio Module	Honeywell Safety and Productivity Solutions	IM14	FCC Test Unit 1

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter (EUT)	Phihong	PSAC3OU-120L6	None
GPIO Breakout Box	Intermec	None	None
6dBi Linear Patch Antenna	Intermec	IA36B	LCC0653256

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Dell	PP18L	SAC-TEST005
AC Power Adapter (Laptop)	Dell	PA-1650-05D2	SAC-TEST

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Ethernet	No	2.0m	No	Laptop PC	RFID Radio Module
DC Power (EUT)	No	1.8m	No	AC Power Adapter (EUT)	RFID Radio Module
AC Power (EUT)	No	1.7m	No	AC Mains	AC Power Adapter (EUT)
AC Power (Laptop)	No	1.5m	No	AC Mains	AC Power Adapter (Laptop)
DC Power (Laptop)	No	2.0m	Yes	AC Power Adapter (Laptop)	Laptop
RF Cable	Yes	9.0m	No	RFID Radio Module	Antenna
GPIO Cable	No	2.0m	No	RFID Radio Module	GPIO Breakout Box

CONFIGURATIONS

Configuration INMC1093- 7

Software/Firmware Running during test	
Description	**Version**
JRFID App	2.24

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RFID Radio Module	Honeywell Safety and Productivity Solutions	IM14	17211163003

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter (EUT)	Phihong	PSAC3OU-120L6	None
11dBic Panel RCP Antenna	Huber Suhner	1309.56.0001	00179
GPIO Breakout Box	Intermec	None	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Dell	PP18L	SAC-TEST005
AC Power Adapter (Laptop)	Dell	PA-1650-05D2	SAC-TEST

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Ethernet	No	2.0m	No	Laptop PC	RFID Radio Module
DC Power (EUT)	No	1.8m	No	AC Power Adapter (EUT)	RFID Radio Module
AC Power (EUT)	No	1.7m	No	AC Mains	AC Power Adapter (EUT)
AC Power (Laptop)	No	1.5m	No	AC Mains	AC Power Adapter (Laptop)
DC Power (Laptop)	No	2.0m	Yes	AC Power Adapter (Laptop)	Laptop
RF Cable	Yes	9.0m	No	RFID Radio Module	Antenna
GPIO Cable	No	2.0m	No	RFID Radio Module	GPIO Breakout Box

CONFIGURATIONS

Configuration INMC1093- 8

Software/Firmware Running during test	
Description	**Version**
JRFID App	2.24

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RFID Radio Module	Honeywell Safety and Productivity Solutions	IM14	17211163003

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter (EUT)	Phihong	PSAC3OU-120L6	None
GPIO Breakout Box	Intermec	None	None
7dBic RCP Patch Antenna	Cushcraft	IA33A	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Dell	PP18L	SAC-TEST005
AC Power Adapter (Laptop)	Dell	PA-1650-05D2	SAC-TEST

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Ethernet	No	2.0m	No	Laptop PC	RFID Radio Module
DC Power (EUT)	No	1.8m	No	AC Power Adapter (EUT)	RFID Radio Module
AC Power (EUT)	No	1.7m	No	AC Mains	AC Power Adapter (EUT)
AC Power (Laptop)	No	1.5m	No	AC Mains	AC Power Adapter (Laptop)
DC Power (Laptop)	No	2.0m	Yes	AC Power Adapter (Laptop)	Laptop
GPIO Cable	No	2.0m	No	RFID Radio Module	GPIO Breakout Box
RF Cable	Yes	4.0m	No	7dBic RCP Patch Antenna	RFID Radio Module

CONFIGURATIONS

Configuration INMC1093- 9

Software/Firmware Running during test	
Description	**Version**
JRFID App	2.24

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RFID Radio Module	Honeywell Safety and Productivity Solutions	IM14	17211163003

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter (EUT)	Phihong	PSAC3OU-120L6	None
GPIO Breakout Box	Intermec	None	None
5.5dBi Multi-Axis Dipole Antenna	NeWave	WAVE-N7	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Dell	PP18L	SAC-TEST005
AC Power Adapter (Laptop)	Dell	PA-1650-05D2	SAC-TEST

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Ethernet	No	2.0m	No	Laptop PC	RFID Radio Module
DC Power (EUT)	No	1.8m	No	AC Power Adapter (EUT)	RFID Radio Module
AC Power (EUT)	No	1.7m	No	AC Mains	AC Power Adapter (EUT)
AC Power (Laptop)	No	1.5m	No	AC Mains	AC Power Adapter (Laptop)
DC Power (Laptop)	No	2.0m	Yes	AC Power Adapter (Laptop)	Laptop
RF Cable	Yes	9.0m	No	RFID Radio Module	Antenna
GPIO Cable	No	2.0m	No	RFID Radio Module	GPIO Breakout Box

CONFIGURATIONS

Configuration INMC1093- 10

Software/Firmware Running during test	
Description	**Version**
JRFID App	2.24

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RFID Radio Module	Honeywell Safety and Productivity Solutions	IM14	17211163003

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter (EUT)	Phihong	PSAC3OU-120L6	None
GPIO Breakout Box	Intermec	None	None
12.5dBi Linear Directional Antenna	Mti Wireless Edge	263006/S/E	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Dell	PP18L	SAC-TEST005
AC Power Adapter (Laptop)	Dell	PA-1650-05D2	SAC-TEST

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Ethernet	No	2.0m	No	Laptop PC	RFID Radio Module
DC Power (EUT)	No	1.8m	No	AC Power Adapter (EUT)	RFID Radio Module
AC Power (EUT)	No	1.7m	No	AC Mains	AC Power Adapter (EUT)
AC Power (Laptop)	No	1.5m	No	AC Mains	AC Power Adapter (Laptop)
DC Power (Laptop)	No	2.0m	Yes	AC Power Adapter (Laptop)	Laptop
RF Cable	Yes	9.0m	No	RFID Radio Module	Antenna
GPIO Cable	No	2.0m	No	RFID Radio Module	GPIO Breakout Box

CONFIGURATIONS

Configuration INMC1093- 11

Software/Firmware Running during test	
Description	**Version**
JRFID App	2.24

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RFID Radio Module	Honeywell Safety and Productivity Solutions	IM14	17211163003

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter (EUT)	Phihong	PSAC3OU-120L6	None
GPIO Breakout Box	Intermec	None	None
8dBi Linear Panel Antenna	MTI Wireless Edge	MT-242044/N/K	00435

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Dell	PP18L	SAC-TEST005
AC Power Adapter (Laptop)	Dell	PA-1650-05D2	SAC-TEST

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Ethernet	No	2.0m	No	Laptop PC	RFID Radio Module
DC Power (EUT)	No	1.8m	No	AC Power Adapter (EUT)	RFID Radio Module
AC Power (EUT)	No	1.7m	No	AC Mains	AC Power Adapter (EUT)
AC Power (Laptop)	No	1.5m	No	AC Mains	AC Power Adapter (Laptop)
DC Power (Laptop)	No	2.0m	Yes	AC Power Adapter (Laptop)	Laptop
RF Cable	Yes	9.0m	No	RFID Radio Module	Antenna
GPIO Cable	No	2.0m	No	RFID Radio Module	GPIO Breakout Box

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	1/5/2018	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	1/5/2018	Carrier Frequency Separation	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	1/5/2018	Number of Hopping Frequencies	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	1/5/2018	Dwell Time	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	1/5/2018	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	1/5/2018	Band Edge Compliance - Hopping Mode	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	1/5/2018	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	1/5/2018	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
9	1/9/2018	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
10	2/9/2018	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
11	3/21/2018	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

WTD.2017.07.11.1

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
LISN	Solar Electronics	9252-50-R-24-BNC	LIM	8/16/2017	8/16/2018
Receiver	Rohde & Schwarz	ESCI	ARE	8/23/2017	8/23/2018
Cable - Conducted Cable Assembly	Element	NC4, HHF, TYL	NC4A	4/17/2017	4/17/2018

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

INMC1093-2
INMC1093-3
INMC1093-4

MODES INVESTIGATED

Transmitting Mid Channel 30, 915.25 MHz at Default Power Setting = 29 dBm, Antenna Port 4

POWERLINE CONDUCTED EMISSIONS

EUT:	IM14	Work Order:	INMC1093
Serial Number:	FCC Test Unit 1	Date:	01/09/2018
Customer:	Honeywell Safety and Productivity Solutions	Temperature:	23.7°C
Attendees:	Sean MacKellar	Relative Humidity:	36.4%
Customer Project:	None	Bar. Pressure:	1005 mb
Tested By:	Richard Mellroth	Job Site:	NC02
Power:	12 VDC	Configuration:	INMC1093-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2018	ANSI C63.10:2013

TEST PARAMETERS

Run #:	2	Line:	Positive Lead	Add. Ext. Attenuation (dB):	0

COMMENTS

None

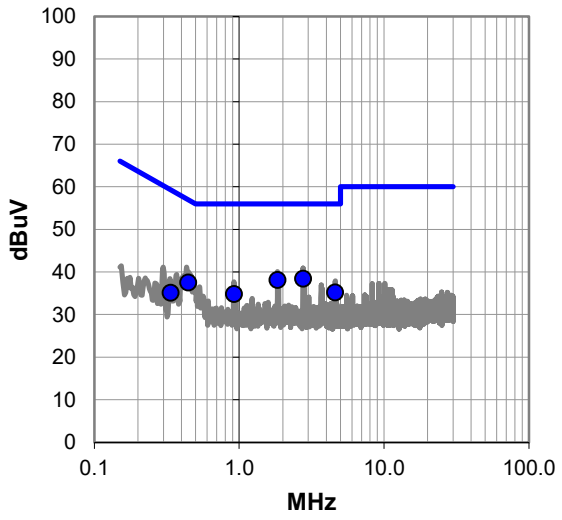
EUT OPERATING MODES

Transmitting Mid Channel 30, 915.25 MHz at Default Power Setting = 29 dBm, Antenna Port 4

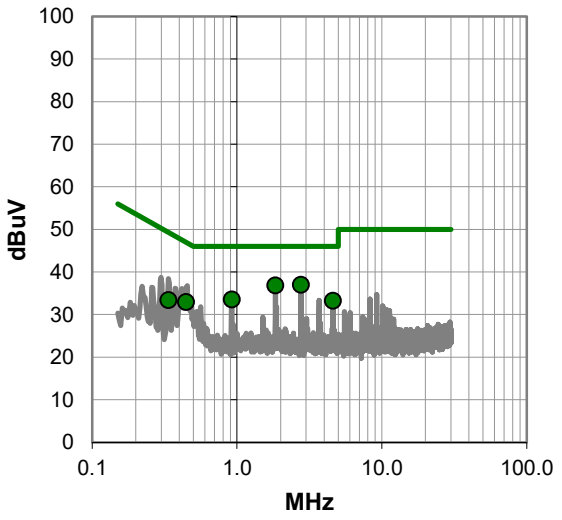
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

WTD.2017.07.11.1

RESULTS - Run #2

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.765	18.1	20.3	38.4	56.0	-17.6
1.843	17.8	20.3	38.1	56.0	-17.9
0.446	17.3	20.2	37.5	56.9	-19.4
4.611	14.7	20.5	35.2	56.0	-20.8
0.921	14.6	20.2	34.8	56.0	-21.2
0.336	14.9	20.2	35.1	59.3	-24.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.765	16.7	20.3	37.0	46.0	-9.0
1.843	16.5	20.3	36.8	46.0	-9.2
0.921	13.3	20.2	33.5	46.0	-12.5
4.611	12.7	20.5	33.2	46.0	-12.8
0.446	12.7	20.2	32.9	46.9	-14.0
0.336	13.2	20.2	33.4	49.3	-15.9

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	IM14	Work Order:	INMC1093
Serial Number:	FCC Test Unit 1	Date:	01/09/2018
Customer:	Honeywell Safety and Productivity Solutions	Temperature:	23.7°C
Attendees:	Sean MacKellar	Relative Humidity:	36.4%
Customer Project:	None	Bar. Pressure:	1005 mb
Tested By:	Richard Mellroth	Job Site:	NC02
Power:	12 VDC	Configuration:	INMC1093-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2018	ANSI C63.10:2013

TEST PARAMETERS

Run #:	3	Line:	Negative Lead	Add. Ext. Attenuation (dB):	0

COMMENTS

None

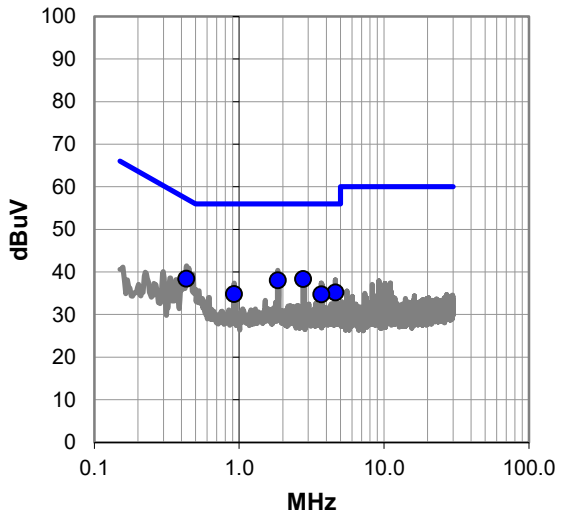
EUT OPERATING MODES

Transmitting Mid Channel 30, 915.25 MHz at Default Power Setting = 29 dBm, Antenna Port 4

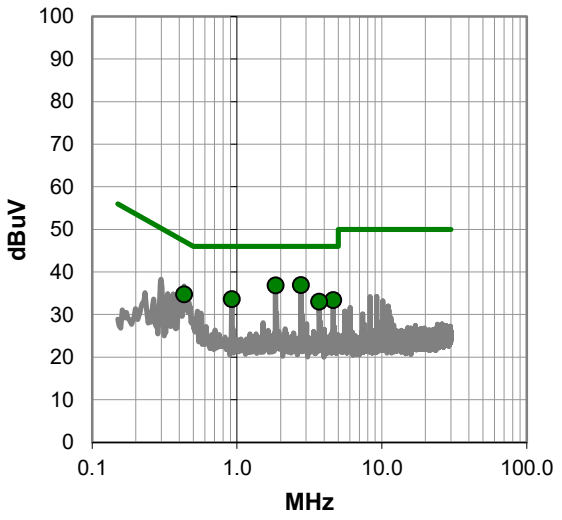
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

WTD.2017.07.11.1

RESULTS - Run #3

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.770	18.0	20.3	38.3	56.0	-17.7
1.847	17.7	20.3	38.0	56.0	-18.0
0.432	18.2	20.2	38.4	57.2	-18.8
4.618	14.7	20.5	35.2	56.0	-20.8
0.924	14.6	20.2	34.8	56.0	-21.2
3.695	14.3	20.4	34.7	56.0	-21.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.770	16.6	20.3	36.9	46.0	-9.1
1.847	16.5	20.3	36.8	46.0	-9.2
0.924	13.4	20.2	33.6	46.0	-12.4
0.432	14.5	20.2	34.7	47.2	-12.5
4.618	12.9	20.5	33.4	46.0	-12.6
3.695	12.6	20.4	33.0	46.0	-13.0

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	IM14	Work Order:	INMC1093
Serial Number:	FCC Test Unit 1	Date:	01/09/2018
Customer:	Honeywell Safety and Productivity Solutions	Temperature:	23.7°C
Attendees:	Sean MacKellar	Relative Humidity:	36.4%
Customer Project:	None	Bar. Pressure:	1005 mb
Tested By:	Richard Mellroth	Job Site:	NC02
Power:	12 VDC via 120VAC/60Hz	Configuration:	INMC1093-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2018	ANSI C63.10:2013

TEST PARAMETERS

Run #:	4	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

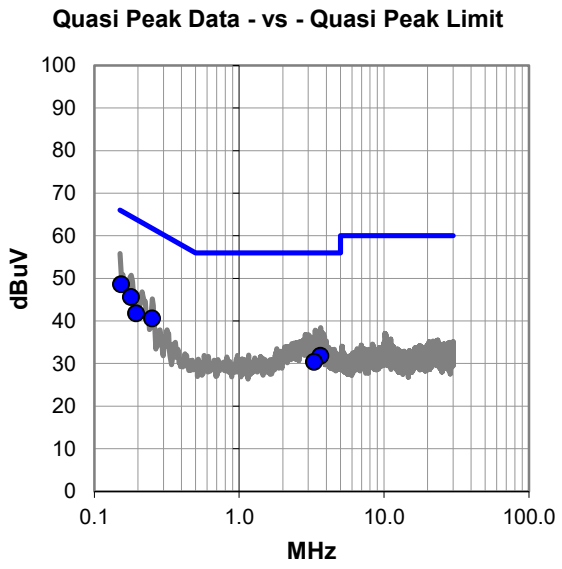
None

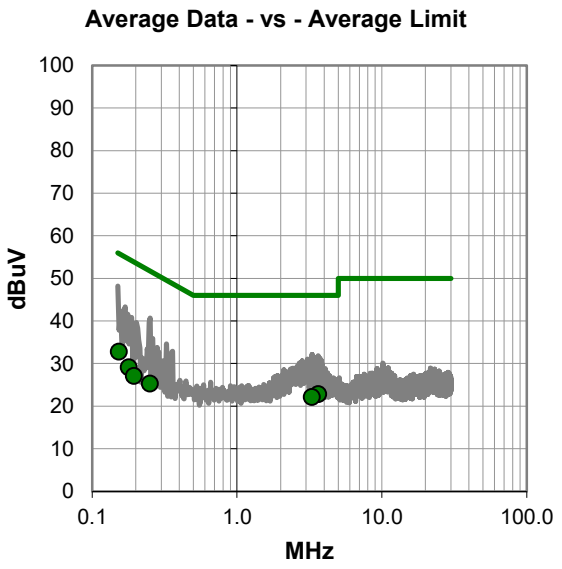
EUT OPERATING MODES

Transmitting Mid Channel 30, 915.25 MHz at Default Power Setting = 29 dBm, Antenna Port 4

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

WTD.2017.07.11.1

RESULTS - Run #4

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.153	28.3	20.3	48.6	65.9	-17.3
0.179	25.3	20.3	45.6	64.5	-18.9
0.251	20.4	20.2	40.6	61.7	-21.1
0.195	21.5	20.3	41.8	63.8	-22.0
3.637	11.4	20.4	31.8	56.0	-24.2
3.297	10.1	20.3	30.4	56.0	-25.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.153	12.5	20.3	32.8	55.9	-23.1
3.637	2.4	20.4	22.8	46.0	-23.2
3.297	1.8	20.3	22.1	46.0	-23.9
0.179	8.8	20.3	29.1	54.5	-25.4
0.251	5.1	20.2	25.3	51.7	-26.4
0.195	6.8	20.3	27.1	53.8	-26.7

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	IM14	Work Order:	INMC1093
Serial Number:	FCC Test Unit 1	Date:	01/09/2018
Customer:	Honeywell Safety and Productivity Solutions	Temperature:	23.7°C
Attendees:	Sean MacKellar	Relative Humidity:	36.4%
Customer Project:	None	Bar. Pressure:	1005 mb
Tested By:	Richard Mellroth	Job Site:	NC02
Power:	12 VDC via 120VAC/60Hz	Configuration:	INMC1093-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2018	ANSI C63.10:2013

TEST PARAMETERS

Run #:	5	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

None

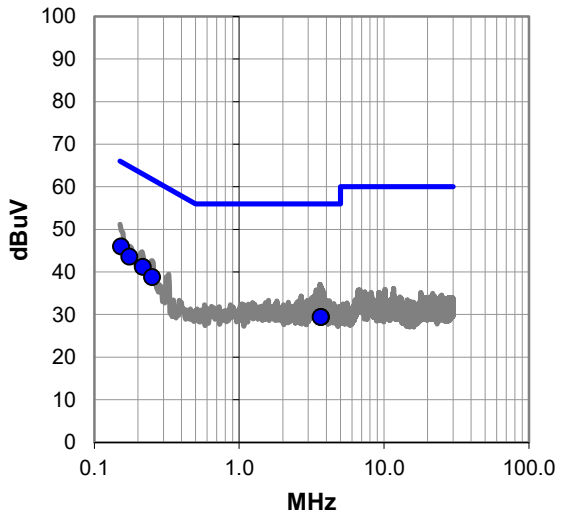
EUT OPERATING MODES

Transmitting Mid Channel 30, 915.25 MHz at Default Power Setting = 29 dBm, Antenna Port 4

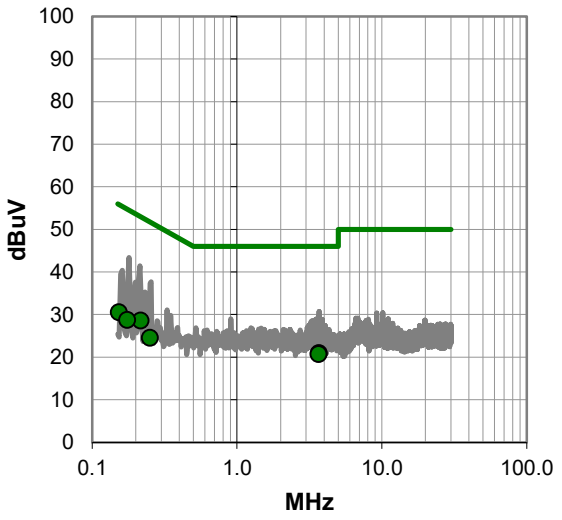
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

WTD.2017.07.11.1

RESULTS - Run #5

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.153	25.7	20.3	46.0	65.9	-19.9
0.174	23.3	20.3	43.6	64.7	-21.1
0.216	21.0	20.2	41.2	63.0	-21.8
0.250	18.6	20.2	38.8	61.8	-23.0
3.682	9.0	20.4	29.4	56.0	-26.6
3.658	9.0	20.4	29.4	56.0	-26.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.216	8.4	20.2	28.6	53.0	-24.4
3.682	0.5	20.4	20.9	46.0	-25.1
3.658	0.3	20.4	20.7	46.0	-25.3
0.153	10.2	20.3	30.5	55.9	-25.4
0.174	8.4	20.3	28.7	54.7	-26.0
0.250	4.3	20.2	24.5	51.8	-27.3

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	IM14	Work Order:	INMC1093
Serial Number:	FCC Test Unit 1	Date:	01/09/2018
Customer:	Honeywell Safety and Productivity Solutions	Temperature:	23.7°C
Attendees:	Sean MacKellar	Relative Humidity:	36.4%
Customer Project:	None	Bar. Pressure:	1005 mb
Tested By:	Richard Mellroth	Job Site:	NC02
Power:	POE via 120VAC/60Hz	Configuration:	INMC1093-4

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2018	ANSI C63.10:2013

TEST PARAMETERS

Run #:	6	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

None

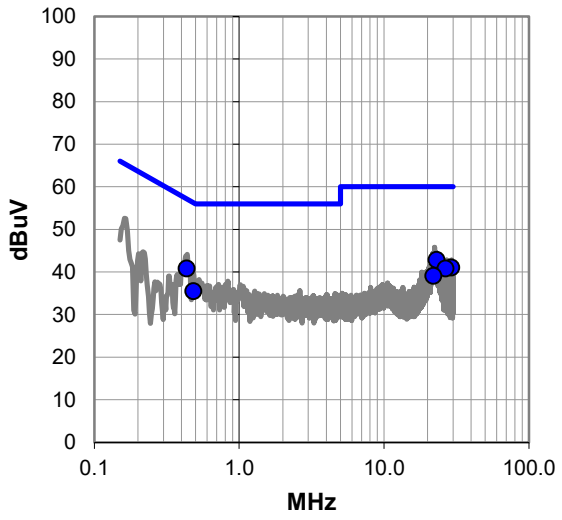
EUT OPERATING MODES

Transmitting Mid Channel 30, 915.25 MHz at Default Power Setting = 29 dBm, Antenna Port 4

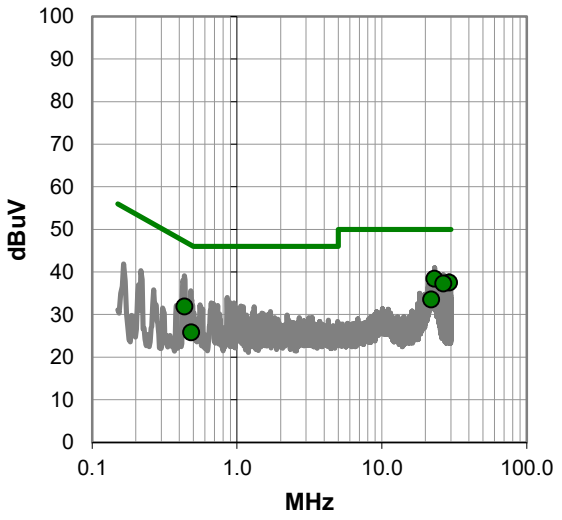
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

WTD.2017.07.11.1

RESULTS - Run #6

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.434	20.6	20.2	40.8	57.2	-16.4
23.128	20.8	22.0	42.8	60.0	-17.2
29.235	18.3	22.7	41.0	60.0	-19.0
26.608	18.4	22.4	40.8	60.0	-19.2
0.483	15.3	20.2	35.5	56.3	-20.8
21.930	17.2	21.9	39.1	60.0	-20.9

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
23.128	16.4	22.0	38.4	50.0	-11.6
29.235	14.8	22.7	37.5	50.0	-12.5
26.608	14.9	22.4	37.3	50.0	-12.7
0.434	11.7	20.2	31.9	47.2	-15.3
21.930	11.6	21.9	33.5	50.0	-16.5
0.483	5.6	20.2	25.8	46.3	-20.5

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	IM14	Work Order:	INMC1093
Serial Number:	FCC Test Unit 1	Date:	01/09/2018
Customer:	Honeywell Safety and Productivity Solutions	Temperature:	23.7°C
Attendees:	Sean MacKellar	Relative Humidity:	36.4%
Customer Project:	None	Bar. Pressure:	1005 mb
Tested By:	Richard Mellroth	Job Site:	NC02
Power:	POE via 120VAC/60Hz	Configuration:	INMC1093-4

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2018	ANSI C63.10:2013

TEST PARAMETERS

Run #:	7	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

None

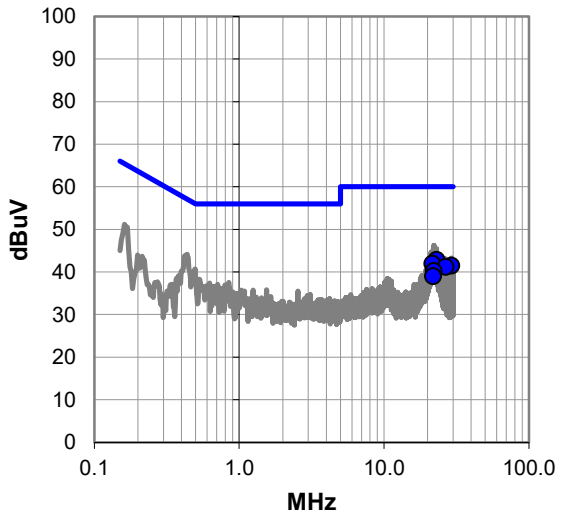
EUT OPERATING MODES

Transmitting Mid Channel 30, 915.25 MHz at Default Power Setting = 29 dBm, Antenna Port 4

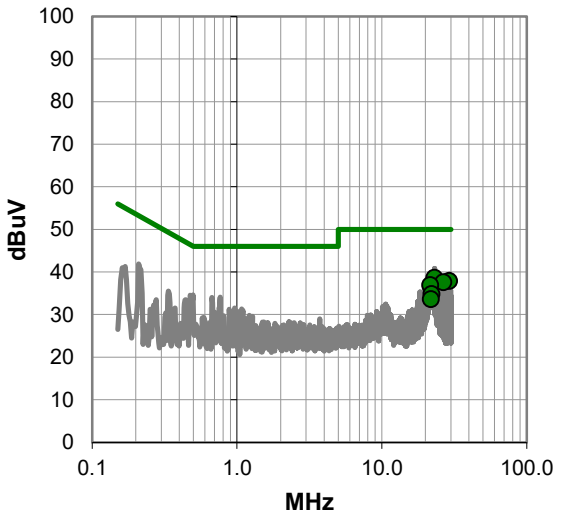
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

WTD.2017.07.11.1

RESULTS - Run #7

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
23.128	20.8	22.0	42.8	60.0	-17.2
21.662	20.0	21.9	41.9	60.0	-18.1
29.234	18.8	22.7	41.5	60.0	-18.5
26.608	18.8	22.4	41.2	60.0	-18.8
22.030	18.3	21.9	40.2	60.0	-19.8
21.870	17.1	21.9	39.0	60.0	-21.0

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
23.128	16.6	22.0	38.6	50.0	-11.4
29.234	15.2	22.7	37.9	50.0	-12.1
26.608	15.2	22.4	37.6	50.0	-12.4
21.662	15.0	21.9	36.9	50.0	-13.1
22.030	12.9	21.9	34.8	50.0	-15.2
21.870	11.7	21.9	33.6	50.0	-16.4

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS
(Config 5 - Linear Patch Antenna)

PSA-ESCI 2017.09.18

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting Low Channel 5, 902.75 MHz at Default Power Setting = 29 dBm, PRASK Modulation, Antenna Port 4
Transmitting Mid Channel 54, 915.25 MHz at Default Power Setting = 29 dBm, PRASK Modulation, Antenna Port 4
Transmitting High Channel 54, 927.25 MHz at Default Power Setting = 29 dBm, PRASK Modulation, Antenna Port 4

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INMC1093 - 5

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	12400 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HHO	17-Apr-2017	12 mo
Cable	Element	Standard Gain Horn Cable	NC3	19-May-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	18-Aug-2017	12 mo
Antenna - Standard Gain	EMCO	3160-07	AHP	NCR	0 mo
Filter - High Pass	Micro-Tronics	HPM50114	HFN	13-Dec-2017	12 mo
Cable	Element	3115 Horn Cable	NC2	19-May-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVZ	19-May-2017	12 mo
Antenna - Double Ridge	EMCO	3115	AHM	10-Jun-2016	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAB	11-Jul-2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYL	11-Aug-2017	24 mo
Cable	Element	Bilog Cables	NC1	11-Jul-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFF	13-Dec-2017	12 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-2017	12 mo

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

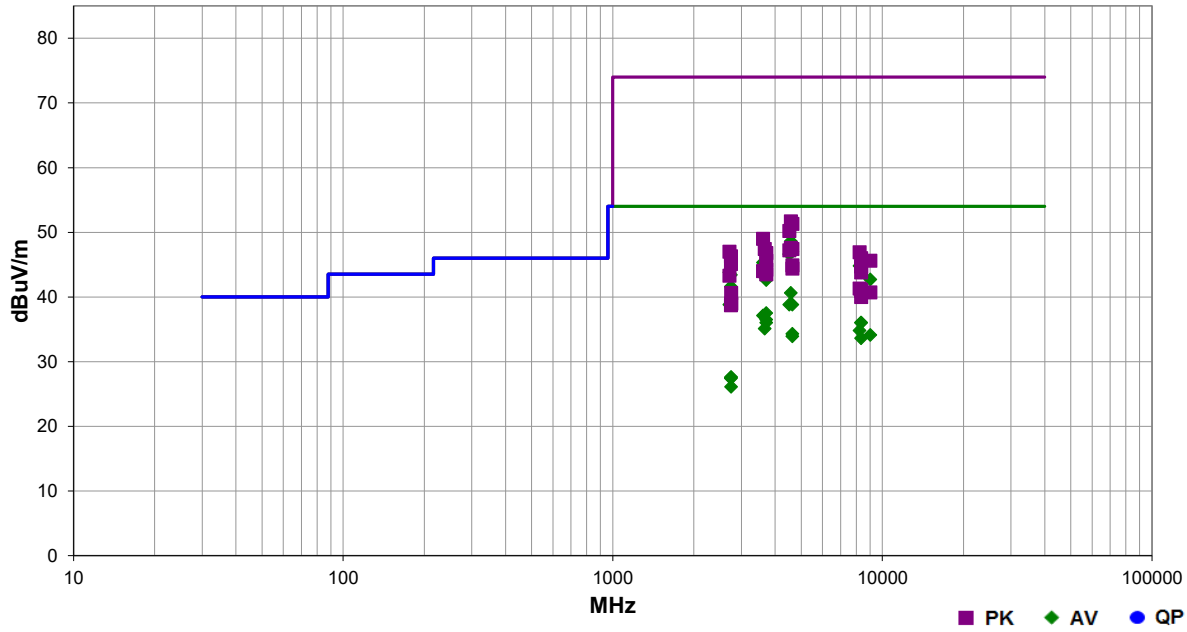
SPURIOUS RADIATED EMISSIONS (Config 5 - Linear Patch Antenna)

EmiR5 2017.09.18.2 PSA-ESCI 2017.09.18

Work Order:	INMC1093	**Date:**	7-Feb-2018		
Project:	None	**Temperature:**	22.3 °C		
Job Site:	NC01	**Humidity:**	39.8% RH		
Serial Number:	FCC Test Unit 1	**Barometric Pres.:**	1032 mbar	**Tested by:**	Matthew Barnes
EUT:	IM14				
Configuration:	5				
Customer:	Honeywell Safety and Productivity Solutions				
Attendees:	Sean MacKellar				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at Default Power Setting = 29 dBm, PRASK Modulation, Antenna Port 4. See comments next to each data point for Channel and EUT Orientation information.				
Deviations:	None				
Comments:	6dBi Linear Patch Antenna.				

Test Specifications	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

Run #	12	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4576.255	41.2	7.4	3.6	107.0	3.0	0.0	Horz	AV	0.0	48.6	54.0	-5.4	Mid Ch, EUT on End
4636.260	39.4	7.6	3.9	86.0	3.0	0.0	Horz	AV	0.0	47.0	54.0	-7.0	High Ch, EUT on End
4513.805	39.3	7.3	1.9	87.0	3.0	0.0	Horz	AV	0.0	46.6	54.0	-7.4	Low Ch, EUT on End
3610.980	42.0	3.3	2.3	110.0	3.0	0.0	Horz	AV	0.0	45.3	54.0	-8.7	Low Ch, EUT on End
8237.275	50.0	-5.2	2.0	125.0	3.0	0.0	Horz	AV	0.0	44.8	54.0	-9.2	Mid Ch, EUT on End
8345.230	48.9	-5.1	1.9	120.0	3.0	0.0	Horz	AV	0.0	43.8	54.0	-10.2	High Ch, EUT on End
2708.260	44.0	-0.2	2.0	347.0	3.0	0.0	Vert	AV	0.0	43.8	54.0	-10.2	Low Ch, EUT on End
2745.770	43.6	-0.2	2.0	351.0	3.0	0.0	Vert	AV	0.0	43.4	54.0	-10.6	Mid Ch, EUT on End
3660.990	39.4	3.7	1.5	144.0	3.0	0.0	Horz	AV	0.0	43.1	54.0	-10.9	Mid Ch, EUT on End
9027.495	47.1	-4.4	1.9	119.0	3.0	0.0	Horz	AV	0.0	42.7	54.0	-11.3	Low Ch, EUT on End
3708.980	38.7	3.9	1.7	106.0	3.0	0.0	Horz	AV	0.0	42.6	54.0	-11.4	High Ch, EUT on End
2745.800	41.8	-0.2	1.8	68.0	3.0	0.0	Horz	AV	0.0	41.6	54.0	-12.4	Mid Ch, EUT on End
8345.250	46.3	-5.1	2.8	103.0	3.0	0.0	Vert	AV	0.0	41.2	54.0	-12.8	High Ch, EUT Flat
4576.210	33.2	7.4	4.0	59.0	3.0	0.0	Vert	AV	0.0	40.6	54.0	-13.4	Mid Ch, EUT on End
8345.240	45.2	-5.1	2.8	93.0	3.0	0.0	Vert	AV	0.0	40.1	54.0	-13.9	High Ch, EUT on Side
2708.215	39.0	-0.2	2.0	75.0	3.0	0.0	Horz	AV	0.0	38.8	54.0	-15.2	Low Ch, EUT on End
4513.755	31.5	7.3	2.1	45.0	3.0	0.0	Vert	AV	0.0	38.8	54.0	-15.2	Low Ch, EUT on End
4636.260	31.2	7.6	2.0	65.0	3.0	0.0	Vert	AV	0.0	38.8	54.0	-15.2	High Ch, EUT on End

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
3708.960	33.6	3.9	1.0	92.0	3.0	0.0	Horz	AV	0.0	37.5	54.0	-16.5	High Ch, EUT Flat
3611.000	33.8	3.3	1.0	348.0	3.0	0.0	Vert	AV	0.0	37.1	54.0	-16.9	Low Ch, EUT on End
3709.045	32.6	3.9	1.0	195.0	3.0	0.0	Vert	AV	0.0	36.5	54.0	-17.5	High Ch, EUT Flat
8345.275	41.1	-5.1	3.9	345.0	3.0	0.0	Horz	AV	0.0	36.0	54.0	-18.0	High Ch, EUT Flat
8345.295	41.1	-5.1	1.8	70.0	3.0	0.0	Horz	AV	0.0	36.0	54.0	-18.0	High Ch, EUT on Side
3708.955	32.1	3.9	1.0	0.0	3.0	0.0	Vert	AV	0.0	36.0	54.0	-18.0	High Ch, EUT on End
3660.975	31.4	3.7	1.0	282.0	3.0	0.0	Vert	AV	0.0	35.1	54.0	-18.9	Mid Ch, EUT on End
8237.225	40.0	-5.2	2.0	88.0	3.0	0.0	Vert	AV	0.0	34.8	54.0	-19.2	Mid Ch, EUT on End
4636.175	26.7	7.6	1.6	44.0	3.0	0.0	Vert	AV	0.0	34.3	54.0	-19.7	High Ch, EUT Flat
9027.500	38.5	-4.4	2.0	131.0	3.0	0.0	Vert	AV	0.0	34.1	54.0	-19.9	Low Ch, EUT on End
4636.190	26.3	7.6	2.0	140.0	3.0	0.0	Horz	AV	0.0	33.9	54.0	-20.1	High Ch, EUT Flat
8345.255	38.7	-5.1	3.3	102.0	3.0	0.0	Vert	AV	0.0	33.6	54.0	-20.4	High Ch, EUT on End
4576.210	44.3	7.4	3.6	107.0	3.0	0.0	Horz	PK	0.0	51.7	74.0	-22.3	Mid Ch, EUT on End
4636.170	43.7	7.6	3.9	86.0	3.0	0.0	Horz	PK	0.0	51.3	74.0	-22.7	High Ch, EUT on End
4513.670	42.9	7.3	1.9	87.0	3.0	0.0	Horz	PK	0.0	50.2	74.0	-23.8	Low Ch, EUT on End
3611.060	45.7	3.3	2.3	110.0	3.0	0.0	Horz	PK	0.0	49.0	74.0	-25.0	Low Ch, EUT on End
2747.430	27.8	-0.2	2.0	134.0	3.0	0.0	Vert	AV	0.0	27.6	54.0	-26.4	High Ch, EUT Flat
4576.145	40.2	7.4	4.0	59.0	3.0	0.0	Vert	PK	0.0	47.6	74.0	-26.4	Mid Ch, EUT on End
2744.945	27.7	-0.2	2.0	107.0	3.0	0.0	Vert	AV	0.0	27.5	54.0	-26.5	High Ch, EUT on End
3660.915	43.7	3.7	1.5	144.0	3.0	0.0	Horz	PK	0.0	47.4	74.0	-26.6	Mid Ch, EUT on End
2746.050	27.6	-0.2	3.2	162.0	3.0	0.0	Horz	AV	0.0	27.4	54.0	-26.6	High Ch, EUT on End
4636.140	39.8	7.6	2.0	65.0	3.0	0.0	Vert	PK	0.0	47.4	74.0	-26.6	High Ch, EUT on End
4513.990	39.9	7.3	2.1	45.0	3.0	0.0	Vert	PK	0.0	47.2	74.0	-26.8	Low Ch, EUT on End
2708.340	47.2	-0.2	2.0	347.0	3.0	0.0	Vert	PK	0.0	47.0	74.0	-27.0	Low Ch, EUT on End
8237.260	52.1	-5.2	2.0	125.0	3.0	0.0	Horz	PK	0.0	46.9	74.0	-27.1	Mid Ch, EUT on End
3709.030	42.9	3.9	1.7	106.0	3.0	0.0	Horz	PK	0.0	46.8	74.0	-27.2	High Ch, EUT on End
2745.750	46.5	-0.2	2.0	351.0	3.0	0.0	Vert	PK	0.0	46.3	74.0	-27.7	Mid Ch, EUT on End
2747.500	26.3	-0.2	3.5	247.0	3.0	0.0	Horz	AV	0.0	26.1	54.0	-27.9	High Ch, EUT Flat
8345.315	51.1	-5.1	1.9	120.0	3.0	0.0	Horz	PK	0.0	46.0	74.0	-28.0	High Ch, EUT on End
3709.120	41.7	3.9	1.0	92.0	3.0	0.0	Horz	PK	0.0	45.6	74.0	-28.4	High Ch, EUT Flat
9027.565	50.0	-4.4	1.9	119.0	3.0	0.0	Horz	PK	0.0	45.6	74.0	-28.4	Low Ch, EUT on End
2745.830	45.3	-0.2	1.8	68.0	3.0	0.0	Horz	PK	0.0	45.1	74.0	-28.9	Mid Ch, EUT on End
4635.070	37.3	7.6	1.6	44.0	3.0	0.0	Vert	PK	0.0	44.9	74.0	-29.1	High Ch, EUT Flat
8345.270	49.8	-5.1	2.8	103.0	3.0	0.0	Vert	PK	0.0	44.7	74.0	-29.3	High Ch, EUT Flat
4636.600	36.8	7.6	2.0	140.0	3.0	0.0	Horz	PK	0.0	44.4	74.0	-29.6	High Ch, EUT Flat
3709.125	40.3	3.9	1.0	195.0	3.0	0.0	Vert	PK	0.0	44.2	74.0	-29.8	High Ch, EUT Flat
3661.230	40.3	3.7	1.0	282.0	3.0	0.0	Vert	PK	0.0	44.0	74.0	-30.0	Mid Ch, EUT on End
3611.130	40.7	3.3	1.0	348.0	3.0	0.0	Vert	PK	0.0	44.0	74.0	-30.0	Low Ch, EUT on End
8345.135	48.9	-5.1	2.8	93.0	3.0	0.0	Vert	PK	0.0	43.8	74.0	-30.2	High Ch, EUT on Side
3708.895	39.6	3.9	1.0	0.0	3.0	0.0	Vert	PK	0.0	43.5	74.0	-30.5	High Ch, EUT on End
2708.210	43.5	-0.2	2.0	75.0	3.0	0.0	Horz	PK	0.0	43.3	74.0	-30.7	Low Ch, EUT on End
8237.315	46.5	-5.2	2.0	88.0	3.0	0.0	Vert	PK	0.0	41.3	74.0	-32.7	Mid Ch, EUT on End
8345.325	46.2	-5.1	3.9	345.0	3.0	0.0	Horz	PK	0.0	41.1	74.0	-32.9	High Ch, EUT Flat
8345.240	46.0	-5.1	1.8	70.0	3.0	0.0	Horz	PK	0.0	40.9	74.0	-33.1	High Ch, EUT on Side
9027.670	45.1	-4.4	2.0	131.0	3.0	0.0	Vert	PK	0.0	40.7	74.0	-33.3	Low Ch, EUT on End
2747.300	40.8	-0.2	3.5	247.0	3.0	0.0	Horz	PK	0.0	40.6	74.0	-33.4	High Ch, EUT Flat
8345.655	45.1	-5.1	3.3	102.0	3.0	0.0	Vert	PK	0.0	40.0	74.0	-34.0	High Ch, EUT on End
2746.370	39.2	-0.2	2.0	107.0	3.0	0.0	Vert	PK	0.0	39.0	74.0	-35.0	High Ch, EUT on End
2747.095	39.1	-0.2	2.0	134.0	3.0	0.0	Vert	PK	0.0	38.9	74.0	-35.1	High Ch, EUT Flat
2744.890	38.9	-0.2	3.2	162.0	3.0	0.0	Horz	PK	0.0	38.7	74.0	-35.3	High Ch, EUT on End

SPURIOUS RADIATED EMISSIONS (Config 7 - Circular Panel Antenna)

PSA-ESCI 2017.09.18

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting at Default Power Setting = 29 dBm, Antenna Port 4, PRASK Modulation

CHANNELS TESTED

Low Channel 5, 902.75 MHz
Mid Channel 30, 915.25 MHz
High Channel 54, 927.25 MHz

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INMC1093 - 7

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	12400 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Filter - Low Pass	Micro-Tronics	LPM50003	LFE	19-Oct-2017	12 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-2017	12 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HHO	17-Apr-2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50114	HFN	13-Dec-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFF	13-Dec-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	18-Aug-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVZ	19-May-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAB	11-Jul-2017	12 mo
Antenna - Standard Gain	EMCO	3160-07	AHP	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHM	10-Jun-2016	24 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYL	11-Aug-2017	24 mo
Cable	Element	Standard Gain Horn Cable	NC3	19-May-2017	12 mo
Cable	Element	3115 Horn Cable	NC2	19-May-2017	12 mo
Cable	Element	Bilog Cables	NC1	11-Jul-2017	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

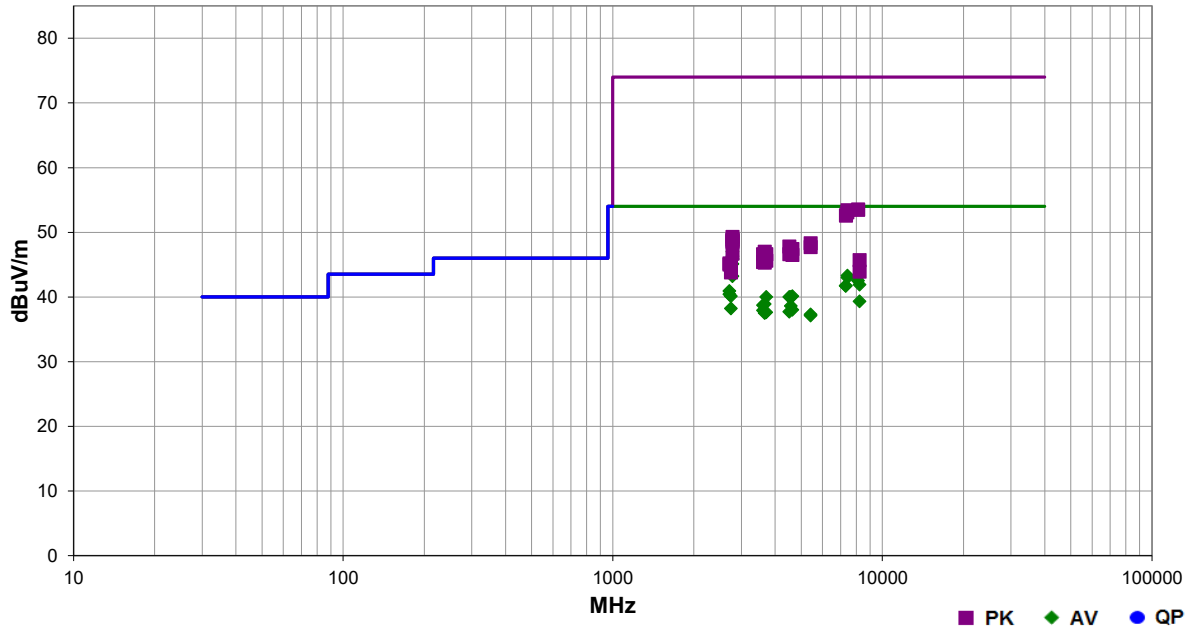
SPURIOUS RADIATED EMISSIONS (Config 7 - Circular Panel Antenna)

EmiR5 2017.09.18.2 PSA-ESCI 2017.09.18

Work Order:	INMC1093	**Date:**	13-Feb-2018		
Project:	None	**Temperature:**	24.1 °C		
Job Site:	NC01	**Humidity:**	21.2% RH		
Serial Number:	17211163003	**Barometric Pres.:**	1028 mbar	**Tested by:**	Richard Mellroth
EUT:	IM14				
Configuration:	7				
Customer:	Honeywell Safety and Productivity Solutions				
Attendees:	Sean MacKellar				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at Default Power Setting = 29 dBm, Antenna Port 4, PRASK Modulation. See comments next to data points for EUT channel and orientation.				
Deviations:	None				
Comments:	Panel RCP 11dBic Antenna				

Test Specifications	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

Run #	38-41	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2781.780	47.1	-0.1	1.6	295.0	3.0	0.0	Horz	AV	0.0	47.0	54.0	-7.0	High Ch 54, EUT Flat
2781.780	46.4	-0.1	1.9	292.0	3.0	0.0	Horz	AV	0.0	46.3	54.0	-7.7	High Ch 54, EUT on Side
2781.725	46.0	-0.1	1.6	292.0	3.0	0.0	Horz	AV	0.0	45.9	54.0	-8.1	High Ch 54, EUT on End
2781.740	45.9	-0.1	1.1	331.0	3.0	0.0	Vert	AV	0.0	45.8	54.0	-8.2	High Ch 54, EUT on End
2781.755	45.2	-0.1	1.2	336.0	3.0	0.0	Vert	AV	0.0	45.1	54.0	-8.9	High Ch 54, EUT on Side
7418.030	29.3	14.0	3.5	335.0	3.0	0.0	Horz	AV	0.0	43.3	54.0	-10.7	High Ch 54, EUT Flat
2781.770	43.3	-0.1	1.6	335.0	3.0	0.0	Vert	AV	0.0	43.2	54.0	-10.8	High Ch 54, EUT Flat
8124.735	28.2	14.9	1.6	87.0	3.0	0.0	Vert	AV	0.0	43.1	54.0	-10.9	Low Ch 5, EUT on End
7417.995	29.0	14.0	2.5	110.0	3.0	0.0	Vert	AV	0.0	43.0	54.0	-11.0	High Ch 54, EUT on End
8124.475	27.6	14.9	1.8	214.0	3.0	0.0	Horz	AV	0.0	42.5	54.0	-11.5	Low Ch 5, EUT Flat
8237.333	47.1	-5.2	1.6	84.0	3.0	0.0	Horz	AV	0.0	41.9	54.0	-12.1	Mid Ch 30, EUT Flat
7319.700	28.2	13.5	1.3	122.0	3.0	0.0	Horz	AV	0.0	41.7	54.0	-12.3	Mid Ch 30, EUT Flat
7320.933	28.2	13.5	1.6	131.0	3.0	0.0	Vert	AV	0.0	41.7	54.0	-12.3	Mid Ch 30, EUT on End
2708.315	41.1	-0.2	1.4	268.0	3.0	0.0	Horz	AV	0.0	40.9	54.0	-13.1	Low Ch 5, EUT Flat
2708.240	40.6	-0.2	1.5	301.0	3.0	0.0	Vert	AV	0.0	40.4	54.0	-13.6	Low Ch 5, EUT on End
4636.200	32.5	7.6	3.9	9.0	3.0	0.0	Vert	AV	0.0	40.1	54.0	-13.9	High Ch 54, EUT on End
2745.792	40.3	-0.2	3.6	326.0	3.0	0.0	Horz	AV	0.0	40.1	54.0	-13.9	Mid Ch 30, EUT Flat
3709.065	36.1	3.9	3.8	104.0	3.0	0.0	Horz	AV	0.0	40.0	54.0	-14.0	High Ch 54, EUT Flat

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4513.795	32.7	7.3	3.3	287.0	3.0	0.0	Horz	AV	0.0	40.0	54.0	-14.0	Low Ch 5, EUT Flat
4576.192	32.6	7.4	1.6	74.0	3.0	0.0	Vert	AV	0.0	40.0	54.0	-14.0	Mid Ch 30, EUT on End
8237.283	44.5	-5.2	1.0	88.0	3.0	0.0	Vert	AV	0.0	39.3	54.0	-14.7	Mid Ch 30, EUT on End
3661.142	35.2	3.7	1.0	13.0	3.0	0.0	Horz	AV	0.0	38.9	54.0	-15.1	Mid Ch 30, EUT Flat
3610.945	35.4	3.3	1.5	0.0	3.0	0.0	Vert	AV	0.0	38.7	54.0	-15.3	Low Ch 5, EUT on End
4576.275	31.2	7.4	1.0	145.0	3.0	0.0	Horz	AV	0.0	38.6	54.0	-15.4	Mid Ch 30, EUT Flat
2745.792	38.4	-0.2	3.7	304.0	3.0	0.0	Vert	AV	0.0	38.2	54.0	-15.8	Mid Ch 30, EUT on End
4636.255	30.4	7.6	1.1	141.0	3.0	0.0	Horz	AV	0.0	38.0	54.0	-16.0	High Ch 54, EUT Flat
3610.980	34.6	3.3	1.1	81.0	3.0	0.0	Horz	AV	0.0	37.9	54.0	-16.1	Low Ch 5, EUT Flat
4513.845	30.4	7.3	1.6	58.0	3.0	0.0	Vert	AV	0.0	37.7	54.0	-16.3	Low Ch 5, EUT on End
3709.100	33.7	3.9	1.6	132.0	3.0	0.0	Vert	AV	0.0	37.6	54.0	-16.4	High Ch 54, EUT on End
3661.017	33.8	3.7	1.6	135.0	3.0	0.0	Vert	AV	0.0	37.5	54.0	-16.5	Mid Ch 30, EUT on End
5416.535	27.3	10.0	2.7	271.0	3.0	0.0	Horz	AV	0.0	37.3	54.0	-16.7	Low Ch 5, EUT Flat
5415.310	27.1	10.0	1.6	105.0	3.0	0.0	Vert	AV	0.0	37.1	54.0	-16.9	Low Ch 5, EUT on End
8125.440	38.6	14.9	1.8	214.0	3.0	0.0	Horz	PK	0.0	53.5	74.0	-20.5	Low Ch 5, EUT Flat
8124.945	38.6	14.9	1.6	87.0	3.0	0.0	Vert	PK	0.0	53.5	74.0	-20.5	Low Ch 5, EUT on End
7418.345	39.4	14.0	3.5	335.0	3.0	0.0	Horz	PK	0.0	53.4	74.0	-20.6	High Ch 54, EUT Flat
7416.735	39.1	14.0	2.5	110.0	3.0	0.0	Vert	PK	0.0	53.1	74.0	-20.9	High Ch 54, EUT on End
7321.983	39.1	13.5	1.3	122.0	3.0	0.0	Horz	PK	0.0	52.6	74.0	-21.4	Mid Ch 30, EUT Flat
7324.175	39.1	13.5	1.6	131.0	3.0	0.0	Vert	PK	0.0	52.6	74.0	-21.4	Mid Ch 30, EUT on End
2781.755	49.4	-0.1	1.6	295.0	3.0	0.0	Horz	PK	0.0	49.3	74.0	-24.7	High Ch 54, EUT Flat
2781.860	49.0	-0.1	1.9	292.0	3.0	0.0	Horz	PK	0.0	48.9	74.0	-25.1	High Ch 54, EUT on Side
2781.865	48.9	-0.1	1.6	292.0	3.0	0.0	Horz	PK	0.0	48.8	74.0	-25.2	High Ch 54, EUT on End
2781.670	48.8	-0.1	1.2	336.0	3.0	0.0	Vert	PK	0.0	48.7	74.0	-25.3	High Ch 54, EUT on Side
2781.760	48.6	-0.1	1.1	331.0	3.0	0.0	Vert	PK	0.0	48.5	74.0	-25.5	High Ch 54, EUT on End
5416.125	38.3	10.0	1.6	105.0	3.0	0.0	Vert	PK	0.0	48.3	74.0	-25.7	Low Ch 5, EUT on End
4513.860	40.5	7.3	3.3	287.0	3.0	0.0	Horz	PK	0.0	47.8	74.0	-26.2	Low Ch 5, EUT Flat
5416.510	37.7	10.0	2.7	271.0	3.0	0.0	Horz	PK	0.0	47.7	74.0	-26.3	Low Ch 5, EUT Flat
4636.060	39.8	7.6	3.9	9.0	3.0	0.0	Vert	PK	0.0	47.4	74.0	-26.6	High Ch 54, EUT on End
3660.858	43.3	3.7	1.0	13.0	3.0	0.0	Horz	PK	0.0	47.0	74.0	-27.0	Mid Ch 30, EUT Flat
4576.808	39.5	7.4	1.6	74.0	3.0	0.0	Vert	PK	0.0	46.9	74.0	-27.1	Mid Ch 30, EUT on End
4576.425	39.4	7.4	1.0	145.0	3.0	0.0	Horz	PK	0.0	46.8	74.0	-27.2	Mid Ch 30, EUT Flat
2781.820	46.8	-0.1	1.6	335.0	3.0	0.0	Vert	PK	0.0	46.7	74.0	-27.3	High Ch 54, EUT Flat
3709.035	42.7	3.9	3.8	104.0	3.0	0.0	Horz	PK	0.0	46.6	74.0	-27.4	High Ch 54, EUT Flat
3610.915	43.3	3.3	1.5	0.0	3.0	0.0	Vert	PK	0.0	46.6	74.0	-27.4	Low Ch 5, EUT on End
4514.150	39.3	7.3	1.6	58.0	3.0	0.0	Vert	PK	0.0	46.6	74.0	-27.4	Low Ch 5, EUT on End
4635.655	38.9	7.6	1.1	141.0	3.0	0.0	Horz	PK	0.0	46.5	74.0	-27.5	High Ch 54, EUT Flat
8237.375	50.9	-5.2	1.6	84.0	3.0	0.0	Horz	PK	0.0	45.7	74.0	-28.3	Mid Ch 30, EUT Flat
3709.115	41.7	3.9	1.6	132.0	3.0	0.0	Vert	PK	0.0	45.6	74.0	-28.4	High Ch 54, EUT on End
3610.470	42.1	3.3	1.1	81.0	3.0	0.0	Horz	PK	0.0	45.4	74.0	-28.6	Low Ch 5, EUT Flat
3660.875	41.6	3.7	1.6	135.0	3.0	0.0	Vert	PK	0.0	45.3	74.0	-28.7	Mid Ch 30, EUT on End
2708.085	45.4	-0.2	1.4	268.0	3.0	0.0	Horz	PK	0.0	45.2	74.0	-28.8	Low Ch 5, EUT Flat
2745.783	45.3	-0.2	3.6	326.0	3.0	0.0	Horz	PK	0.0	45.1	74.0	-28.9	Mid Ch 30, EUT Flat
2708.155	45.2	-0.2	1.5	301.0	3.0	0.0	Vert	PK	0.0	45.0	74.0	-29.0	Low Ch 5, EUT on End
8237.333	49.1	-5.2	1.0	88.0	3.0	0.0	Vert	PK	0.0	43.9	74.0	-30.1	Mid Ch 30, EUT on End
2745.758	44.0	-0.2	3.7	304.0	3.0	0.0	Vert	PK	0.0	43.8	74.0	-30.2	Mid Ch 30, EUT on End

SPURIOUS RADIATED EMISSIONS (Config 8 - Circular Panel Antenna)

PSA-ESCI 2017.09.18

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting at Default Power Setting = 29 dBm, Antenna Port 4, PRASK Modulation

CHANNELS TESTED

Low Channel 5, 902.75 MHz
Mid Channel 30, 915.25 MHz
High Channel 54, 927.25 MHz

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INMC1093 - 8

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	12400 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-2017	12 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HHO	17-Apr-2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50114	HFN	13-Dec-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFF	13-Dec-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50003	LFE	19-Oct-2017	12 mo
Antenna - Standard Gain	EMCO	3160-07	AHP	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHM	10-Jun-2016	24 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYL	11-Aug-2017	24 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	18-Aug-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVZ	19-May-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAB	11-Jul-2017	12 mo
Cable	Element	Standard Gain Horn Cable	NC3	19-May-2017	12 mo
Cable	Element	3115 Horn Cable	NC2	19-May-2017	12 mo
Cable	Element	Bilog Cables	NC1	11-Jul-2017	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

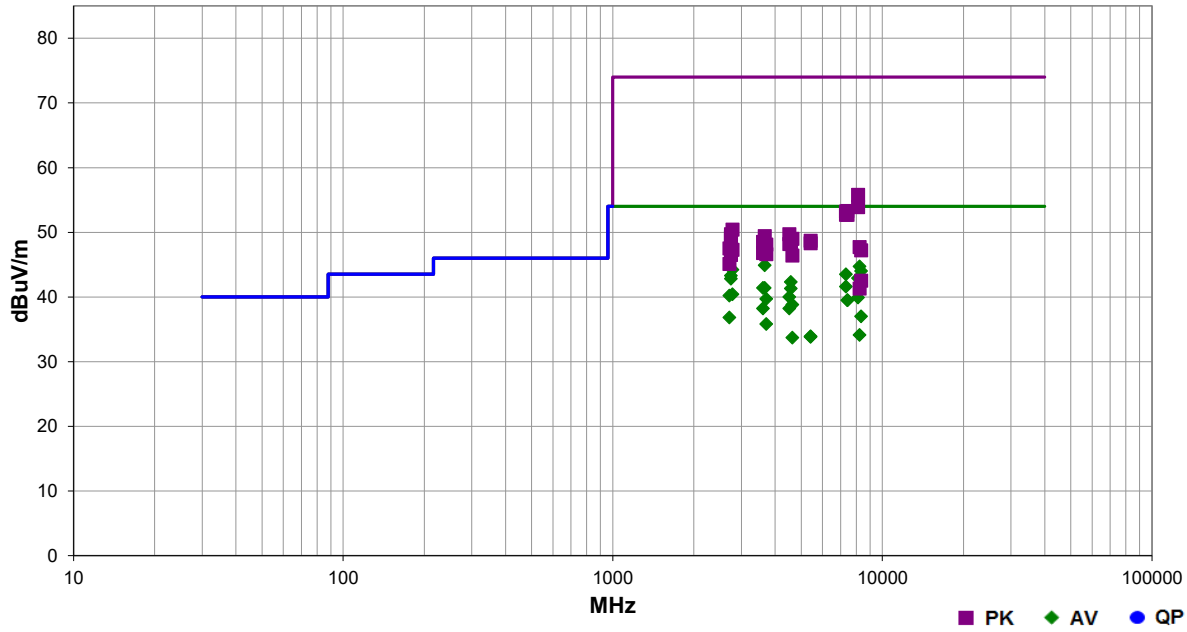
SPURIOUS RADIATED EMISSIONS (Config 8 - Circular Panel Antenna)

EmiR5 2017.09.18.2 PSA-ESCI 2017.09.18

Work Order:	INMC1093	**Date:**	21-Feb-2018		
Project:	None	**Temperature:**	22.8 °C		
Job Site:	NC01	**Humidity:**	17.4% RH		
Serial Number:	17211163003	**Barometric Pres.:**	1028 mbar	**Tested by:**	Richard Mellroth
EUT:	IM14				
Configuration:	8				
Customer:	Honeywell Safety and Productivity Solutions				
Attendees:	Sean MacKellar				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at Default Power Setting = 29 dBm, Antenna Port 4, PRASK Modulation. See comments next to data points for EUT channel and orientation.				
Deviations:	None				
Comments:	7dBic RCP Patch Antenna.				

Test Specifications	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

Run #	54-56	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2745.770	47.8	-0.2	2.2	294.0	3.0	0.0	Horz	AV	0.0	47.6	54.0	-6.4	Mid Ch 30, EUT on End
2745.780	46.9	-0.2	2.9	298.0	3.0	0.0	Horz	AV	0.0	46.7	54.0	-7.3	Mid Ch 30, EUT Flat
2745.815	46.9	-0.2	2.9	300.0	3.0	0.0	Horz	AV	0.0	46.7	54.0	-7.3	Mid Ch 30, EUT on Side
2745.775	46.3	-0.2	1.1	7.0	3.0	0.0	Vert	AV	0.0	46.1	54.0	-7.9	Mid Ch 30, EUT on End
3661.035	41.2	3.7	1.6	11.0	3.0	0.0	Horz	AV	0.0	44.9	54.0	-9.1	Mid Ch 30, EUT on End
8237.340	49.9	-5.2	1.6	82.0	3.0	0.0	Horz	AV	0.0	44.7	54.0	-9.3	Mid Ch 30, EUT on End
2781.790	44.3	-0.1	2.2	306.0	3.0	0.0	Horz	AV	0.0	44.2	54.0	-9.8	High Ch 54, EUT on End
8345.290	49.1	-5.1	2.0	92.0	3.0	0.0	Horz	AV	0.0	44.0	54.0	-10.0	High Ch 54, EUT on End
7322.120	30.0	13.5	1.2	132.0	3.0	0.0	Horz	AV	0.0	43.5	54.0	-10.5	Mid Ch 30, EUT on End
2745.780	43.5	-0.2	2.0	301.0	3.0	0.0	Vert	AV	0.0	43.3	54.0	-10.7	Mid Ch 30, EUT Flat
8124.800	28.0	14.9	1.8	89.0	3.0	0.0	Horz	AV	0.0	42.9	54.0	-11.1	Low Ch 5, EUT on End
2745.800	43.0	-0.2	1.6	86.0	3.0	0.0	Vert	AV	0.0	42.8	54.0	-11.2	Mid Ch 30, EUT on Side
4576.320	34.9	7.4	4.0	119.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.7	Mid Ch 30, EUT on End
7321.805	28.1	13.5	1.6	336.0	3.0	0.0	Vert	AV	0.0	41.6	54.0	-12.4	Mid Ch 30, EUT on End
3661.030	37.7	3.7	4.0	123.0	3.0	0.0	Vert	AV	0.0	41.4	54.0	-12.6	Mid Ch 30, EUT on End
3610.985	38.1	3.3	1.6	142.0	3.0	0.0	Horz	AV	0.0	41.4	54.0	-12.6	Low Ch 5, EUT on End
4576.190	33.9	7.4	3.9	69.0	3.0	0.0	Vert	AV	0.0	41.3	54.0	-12.7	Mid Ch 30, EUT on End
2781.755	40.5	-0.1	1.1	23.0	3.0	0.0	Vert	AV	0.0	40.4	54.0	-13.6	High Ch 54, EUT on End

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2708.240	40.4	-0.2	1.8	292.0	3.0	0.0	Horz	AV	0.0	40.2	54.0	-13.8	Low Ch 5, EUT on End
4513.785	32.7	7.3	3.9	119.0	3.0	0.0	Horz	AV	0.0	40.0	54.0	-14.0	Low Ch 5, EUT on End
8124.830	25.0	14.9	1.6	88.0	3.0	0.0	Vert	AV	0.0	39.9	54.0	-14.1	Low Ch 5, EUT on End
3708.995	35.8	3.9	1.6	12.0	3.0	0.0	Horz	AV	0.0	39.7	54.0	-14.3	High Ch 54, EUT on End
7418.055	25.5	14.0	1.6	1.0	3.0	0.0	Horz	AV	0.0	39.5	54.0	-14.5	High Ch 54, EUT on End
7418.025	25.5	14.0	1.3	100.0	3.0	0.0	Vert	AV	0.0	39.5	54.0	-14.5	High Ch 54, EUT on End
4636.245	31.2	7.6	2.0	50.0	3.0	0.0	Horz	AV	0.0	38.8	54.0	-15.2	High Ch 54, EUT on End
3611.020	34.9	3.3	1.0	88.0	3.0	0.0	Vert	AV	0.0	38.2	54.0	-15.8	Low Ch 5, EUT on End
4513.820	30.9	7.3	1.1	70.0	3.0	0.0	Vert	AV	0.0	38.2	54.0	-15.8	Low Ch 5, EUT on End
8345.275	42.1	-5.1	1.6	70.0	3.0	0.0	Vert	AV	0.0	37.0	54.0	-17.0	High Ch 54, EUT on End
2708.285	37.0	-0.2	1.1	291.0	3.0	0.0	Vert	AV	0.0	36.8	54.0	-17.2	Low Ch 5, EUT on End
3709.045	31.9	3.9	1.9	36.0	3.0	0.0	Vert	AV	0.0	35.8	54.0	-18.2	High Ch 54, EUT on End
8125.025	40.9	14.9	1.8	89.0	3.0	0.0	Horz	PK	0.0	55.8	74.0	-18.2	Low Ch 5, EUT on End
8237.240	39.3	-5.2	1.6	74.0	3.0	0.0	Vert	AV	0.0	34.1	54.0	-19.9	Mid Ch 30, EUT on End
5416.475	23.9	10.0	1.1	58.0	3.0	0.0	Horz	AV	0.0	33.9	54.0	-20.1	Low Ch 5, EUT on End
8124.375	39.0	14.9	1.6	88.0	3.0	0.0	Vert	PK	0.0	53.9	74.0	-20.1	Low Ch 5, EUT on End
5415.135	23.8	10.0	1.9	135.0	3.0	0.0	Vert	AV	0.0	33.8	54.0	-20.2	Low Ch 5, EUT on End
4636.320	26.1	7.6	1.6	103.0	3.0	0.0	Vert	AV	0.0	33.7	54.0	-20.3	High Ch 54, EUT on End
7416.890	39.3	14.0	1.6	1.0	3.0	0.0	Horz	PK	0.0	53.3	74.0	-20.7	High Ch 54, EUT on End
7321.445	39.7	13.5	1.2	132.0	3.0	0.0	Horz	PK	0.0	53.2	74.0	-20.8	Mid Ch 30, EUT on End
7321.065	39.2	13.5	1.6	336.0	3.0	0.0	Vert	PK	0.0	52.7	74.0	-21.3	Mid Ch 30, EUT on End
7417.900	38.7	14.0	1.3	100.0	3.0	0.0	Vert	PK	0.0	52.7	74.0	-21.3	High Ch 54, EUT on End
2781.760	50.5	-0.1	2.2	306.0	3.0	0.0	Horz	PK	0.0	50.4	74.0	-23.6	High Ch 54, EUT on End
2745.795	49.9	-0.2	2.2	294.0	3.0	0.0	Horz	PK	0.0	49.7	74.0	-24.3	Mid Ch 30, EUT on End
4513.585	42.4	7.3	3.9	119.0	3.0	0.0	Horz	PK	0.0	49.7	74.0	-24.3	Low Ch 5, EUT on End
3661.190	45.7	3.7	1.6	11.0	3.0	0.0	Horz	PK	0.0	49.4	74.0	-24.6	Mid Ch 30, EUT on End
2745.735	49.5	-0.2	2.9	300.0	3.0	0.0	Horz	PK	0.0	49.3	74.0	-24.7	Mid Ch 30, EUT on Side
2745.710	49.4	-0.2	2.9	298.0	3.0	0.0	Horz	PK	0.0	49.2	74.0	-24.8	Mid Ch 30, EUT Flat
4636.520	41.4	7.6	2.0	50.0	3.0	0.0	Horz	PK	0.0	49.0	74.0	-25.0	High Ch 54, EUT on End
2745.705	49.0	-0.2	1.1	7.0	3.0	0.0	Vert	PK	0.0	48.8	74.0	-25.2	Mid Ch 30, EUT on End
5416.445	38.7	10.0	1.1	58.0	3.0	0.0	Horz	PK	0.0	48.7	74.0	-25.3	Low Ch 5, EUT on End
4576.430	41.1	7.4	3.9	69.0	3.0	0.0	Vert	PK	0.0	48.5	74.0	-25.5	Mid Ch 30, EUT on End
3610.875	45.2	3.3	1.6	142.0	3.0	0.0	Horz	PK	0.0	48.5	74.0	-25.5	Low Ch 5, EUT on End
5417.400	38.3	10.0	1.9	135.0	3.0	0.0	Vert	PK	0.0	48.3	74.0	-25.7	Low Ch 5, EUT on End
4576.070	40.8	7.4	4.0	119.0	3.0	0.0	Horz	PK	0.0	48.2	74.0	-25.8	Mid Ch 30, EUT on End
4513.420	40.9	7.3	1.1	70.0	3.0	0.0	Vert	PK	0.0	48.2	74.0	-25.8	Low Ch 5, EUT on End
3708.955	44.2	3.9	1.6	12.0	3.0	0.0	Horz	PK	0.0	48.1	74.0	-25.9	High Ch 54, EUT on End
3660.925	44.2	3.7	4.0	123.0	3.0	0.0	Vert	PK	0.0	47.9	74.0	-26.1	Mid Ch 30, EUT on End
8237.255	52.9	-5.2	1.6	82.0	3.0	0.0	Horz	PK	0.0	47.7	74.0	-26.3	Mid Ch 30, EUT on End
2708.245	47.7	-0.2	1.8	292.0	3.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	Low Ch 5, EUT on End
2781.555	47.4	-0.1	1.1	23.0	3.0	0.0	Vert	PK	0.0	47.3	74.0	-26.7	High Ch 54, EUT on End
8345.490	52.3	-5.1	2.0	92.0	3.0	0.0	Horz	PK	0.0	47.2	74.0	-26.8	High Ch 54, EUT on End
3611.170	43.5	3.3	1.0	88.0	3.0	0.0	Vert	PK	0.0	46.8	74.0	-27.2	Low Ch 5, EUT on End
2745.855	46.8	-0.2	2.0	301.0	3.0	0.0	Vert	PK	0.0	46.6	74.0	-27.4	Mid Ch 30, EUT Flat
3708.895	42.7	3.9	1.9	36.0	3.0	0.0	Vert	PK	0.0	46.6	74.0	-27.4	High Ch 54, EUT on End
2745.745	46.7	-0.2	1.6	86.0	3.0	0.0	Vert	PK	0.0	46.5	74.0	-27.5	Mid Ch 30, EUT on Side
4636.315	38.8	7.6	1.6	103.0	3.0	0.0	Vert	PK	0.0	46.4	74.0	-27.6	High Ch 54, EUT on End
2708.185	45.3	-0.2	1.1	291.0	3.0	0.0	Vert	PK	0.0	45.1	74.0	-28.9	Low Ch 5, EUT on End
8345.275	47.6	-5.1	1.6	70.0	3.0	0.0	Vert	PK	0.0	42.5	74.0	-31.5	High Ch 54, EUT on End
8237.305	46.5	-5.2	1.6	74.0	3.0	0.0	Vert	PK	0.0	41.3	74.0	-32.7	Mid Ch 30, EUT on End

SPURIOUS RADIATED EMISSIONS (Config 9 - Dipole Antenna)

PSA-ESCI 2017.09.18

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting at Default Power Setting = 29 dBm, Antenna Port 4, PRASK Modulation

CHANNELS TESTED

Low Channel 5, 902.75 MHz
Mid Channel 30, 915.25 MHz
High Channel 54, 927.25 MHz

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INMC1093 - 9

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	12400 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFE	24-Jun-2017	12 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HHO	17-Apr-2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50114	HFN	13-Dec-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFF	13-Dec-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50003	LFE	19-Oct-2017	12 mo
Antenna - Standard Gain	EMCO	3160-07	AHP	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHM	10-Jun-2016	24 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYL	11-Aug-2017	24 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	18-Aug-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVZ	19-May-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAB	11-Jul-2017	12 mo
Cable	Element	Standard Gain Horn Cable	NC3	19-May-2017	12 mo
Cable	Element	3115 Horn Cable	NC2	19-May-2017	12 mo
Cable	Element	Bilog Cables	NC1	11-Jul-2017	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

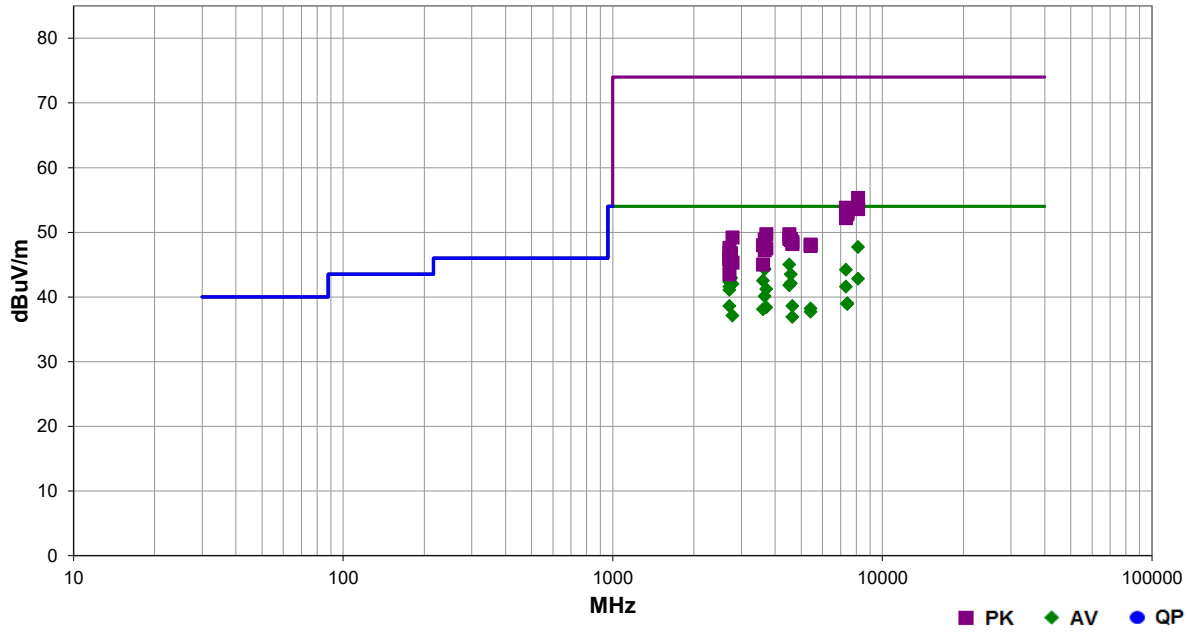
SPURIOUS RADIATED EMISSIONS (Config 9 - Dipole Antenna)

EmiR5 2017.09.18.2 PSA-ESCI 2017.09.18

Work Order:	INMC1093	**Date:**	21-Feb-2018		
Project:	None	**Temperature:**	22.1 °C		
Job Site:	NC01	**Humidity:**	18.1% RH		
Serial Number:	17211163003	**Barometric Pres.:**	1028 mbar	**Tested by:**	Richard Mellroth
EUT:	IM14				
Configuration:	9				
Customer:	Honeywell Safety and Productivity Solutions				
Attendees:	Sean MacKellar				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at Default Power Setting = 29 dBm, Antenna Port 4, PRASK Modulation. High Channel 54, 927.25 MHz				
Deviations:	None				
Comments:	5.5dBi Dipole Antenna.				

Test Specifications	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

Run #	62-64	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
8124.865	32.8	14.9	2.3	86.0	3.0	0.0	Vert	AV	0.0	47.7	54.0	-6.3	Low Ch 5, EUT on Side
4513.765	37.7	7.3	3.4	21.0	3.0	0.0	Vert	AV	0.0	45.0	54.0	-9.0	Low Ch 5, EUT on Side
2708.255	44.5	-0.2	1.8	339.0	3.0	0.0	Horz	AV	0.0	44.3	54.0	-9.7	Low Ch 5, EUT Flat
3660.945	40.6	3.7	1.6	77.0	3.0	0.0	Vert	AV	0.0	44.3	54.0	-9.7	Mid Ch 30, EUT on Side
7322.010	30.7	13.5	1.6	71.0	3.0	0.0	Vert	AV	0.0	44.2	54.0	-9.8	Mid Ch 30, EUT on Side
2708.245	43.7	-0.2	1.6	66.0	3.0	0.0	Horz	AV	0.0	43.5	54.0	-10.5	Low Ch 5, EUT on End
4576.330	36.1	7.4	3.3	14.0	3.0	0.0	Vert	AV	0.0	43.5	54.0	-10.5	Mid Ch 30, EUT on Side
2745.740	43.2	-0.2	1.6	357.0	3.0	0.0	Horz	AV	0.0	43.0	54.0	-11.0	Mid Ch 30, EUT Flat
2745.770	43.1	-0.2	1.6	103.0	3.0	0.0	Vert	AV	0.0	42.9	54.0	-11.1	Mid Ch 30, EUT on Side
8124.755	27.9	14.9	1.8	331.0	3.0	0.0	Horz	AV	0.0	42.8	54.0	-11.2	Low Ch 5, EUT Flat
3610.975	39.2	3.3	1.2	74.0	3.0	0.0	Vert	AV	0.0	42.5	54.0	-11.5	Low Ch 5, EUT on Side
2708.205	42.5	-0.2	2.1	61.0	3.0	0.0	Vert	AV	0.0	42.3	54.0	-11.7	Low Ch 5, EUT on Side
4576.285	34.7	7.4	3.9	326.0	3.0	0.0	Horz	AV	0.0	42.1	54.0	-11.9	Mid Ch 30, EUT Flat
2781.860	42.1	-0.1	1.6	90.0	3.0	0.0	Vert	AV	0.0	42.0	54.0	-12.0	High Ch 54, EUT on Side
4513.775	34.5	7.3	3.1	321.0	3.0	0.0	Horz	AV	0.0	41.8	54.0	-12.2	Low Ch 5, EUT Flat
2708.280	41.8	-0.2	1.6	351.0	3.0	0.0	Vert	AV	0.0	41.6	54.0	-12.4	Low Ch 5, EUT Flat
7321.960	28.1	13.5	1.6	158.0	3.0	0.0	Horz	AV	0.0	41.6	54.0	-12.4	Mid Ch 30, EUT Flat
3709.060	37.3	3.9	1.6	67.0	3.0	0.0	Vert	AV	0.0	41.2	54.0	-12.8	High Ch 54, EUT on Side

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2708.295	41.3	-0.2	1.6	349.0	3.0	0.0	Vert	AV	0.0	41.1	54.0	-12.9	Low Ch 5, EUT on End
3661.105	36.4	3.7	3.4	73.0	3.0	0.0	Horz	AV	0.0	40.1	54.0	-13.9	Mid Ch 30, EUT Flat
7416.530	25.0	14.0	1.6	193.0	3.0	0.0	Vert	AV	0.0	39.0	54.0	-15.0	High Ch 54, EUT on Side
7416.665	24.9	14.0	1.6	264.0	3.0	0.0	Horz	AV	0.0	38.9	54.0	-15.1	High Ch 54, EUT Flat
2708.210	38.8	-0.2	1.6	151.0	3.0	0.0	Horz	AV	0.0	38.6	54.0	-15.4	Low Ch 5, EUT on Side
4636.285	31.0	7.6	1.2	100.0	3.0	0.0	Vert	AV	0.0	38.6	54.0	-15.4	High Ch 54, EUT on Side
3709.040	34.5	3.9	3.3	173.0	3.0	0.0	Horz	AV	0.0	38.4	54.0	-15.6	High Ch 54, EUT Flat
5416.465	28.2	10.0	1.6	25.0	3.0	0.0	Vert	AV	0.0	38.2	54.0	-15.8	Low Ch 5, EUT on Side
3611.030	34.8	3.3	1.6	74.0	3.0	0.0	Horz	AV	0.0	38.1	54.0	-15.9	Low Ch 5, EUT Flat
5416.505	27.7	10.0	1.9	344.0	3.0	0.0	Horz	AV	0.0	37.7	54.0	-16.3	Low Ch 5, EUT Flat
2781.710	37.2	-0.1	1.6	339.0	3.0	0.0	Horz	AV	0.0	37.1	54.0	-16.9	High Ch 54, EUT Flat
4636.290	29.3	7.6	2.7	141.0	3.0	0.0	Horz	AV	0.0	36.9	54.0	-17.1	High Ch 54, EUT Flat
8124.645	40.4	14.9	2.3	86.0	3.0	0.0	Vert	PK	0.0	55.3	74.0	-18.7	Low Ch 5, EUT on Side
7322.225	40.3	13.5	1.6	71.0	3.0	0.0	Vert	PK	0.0	53.8	74.0	-20.2	Mid Ch 30, EUT on Side
8123.895	38.7	14.9	1.8	331.0	3.0	0.0	Horz	PK	0.0	53.6	74.0	-20.4	Low Ch 5, EUT Flat
7418.630	39.1	14.0	1.6	264.0	3.0	0.0	Horz	PK	0.0	53.1	74.0	-20.9	High Ch 54, EUT Flat
7416.615	38.8	14.0	1.6	193.0	3.0	0.0	Vert	PK	0.0	52.8	74.0	-21.2	High Ch 54, EUT on Side
7321.735	38.7	13.5	1.6	158.0	3.0	0.0	Horz	PK	0.0	52.2	74.0	-21.8	Mid Ch 30, EUT Flat
4513.770	42.4	7.3	3.4	21.0	3.0	0.0	Vert	PK	0.0	49.7	74.0	-24.3	Low Ch 5, EUT on Side
3708.995	45.8	3.9	1.6	67.0	3.0	0.0	Vert	PK	0.0	49.7	74.0	-24.3	High Ch 54, EUT on Side
2781.645	49.3	-0.1	1.6	90.0	3.0	0.0	Vert	PK	0.0	49.2	74.0	-24.8	High Ch 54, EUT on Side
4513.925	41.7	7.3	3.1	321.0	3.0	0.0	Horz	PK	0.0	49.0	74.0	-25.0	Low Ch 5, EUT Flat
4576.290	41.6	7.4	3.3	14.0	3.0	0.0	Vert	PK	0.0	49.0	74.0	-25.0	Mid Ch 30, EUT on Side
3661.010	45.2	3.7	1.6	77.0	3.0	0.0	Vert	PK	0.0	48.9	74.0	-25.1	Mid Ch 30, EUT on Side
4576.315	41.4	7.4	3.9	326.0	3.0	0.0	Horz	PK	0.0	48.8	74.0	-25.2	Mid Ch 30, EUT Flat
4636.290	40.9	7.6	1.2	100.0	3.0	0.0	Vert	PK	0.0	48.5	74.0	-25.5	High Ch 54, EUT on Side
4636.395	40.6	7.6	2.7	141.0	3.0	0.0	Horz	PK	0.0	48.2	74.0	-25.8	High Ch 54, EUT Flat
5416.300	38.1	10.0	1.6	25.0	3.0	0.0	Vert	PK	0.0	48.1	74.0	-25.9	Low Ch 5, EUT on Side
3611.160	44.7	3.3	1.2	74.0	3.0	0.0	Vert	PK	0.0	48.0	74.0	-26.0	Low Ch 5, EUT on Side
5416.375	37.9	10.0	1.9	344.0	3.0	0.0	Horz	PK	0.0	47.9	74.0	-26.1	Low Ch 5, EUT Flat
2708.245	47.8	-0.2	1.8	339.0	3.0	0.0	Horz	PK	0.0	47.6	74.0	-26.4	Low Ch 5, EUT Flat
3709.280	43.6	3.9	3.3	173.0	3.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	High Ch 54, EUT Flat
3661.060	43.5	3.7	3.4	73.0	3.0	0.0	Horz	PK	0.0	47.2	74.0	-26.8	Mid Ch 30, EUT Flat
2708.025	47.0	-0.2	1.6	66.0	3.0	0.0	Horz	PK	0.0	46.8	74.0	-27.2	Low Ch 5, EUT on End
2745.940	46.9	-0.2	1.6	357.0	3.0	0.0	Horz	PK	0.0	46.7	74.0	-27.3	Mid Ch 30, EUT Flat
2745.930	46.9	-0.2	1.6	103.0	3.0	0.0	Vert	PK	0.0	46.7	74.0	-27.3	Mid Ch 30, EUT on Side
2708.275	46.3	-0.2	2.1	61.0	3.0	0.0	Vert	PK	0.0	46.1	74.0	-27.9	Low Ch 5, EUT on Side
2708.270	46.0	-0.2	1.6	351.0	3.0	0.0	Vert	PK	0.0	45.8	74.0	-28.2	Low Ch 5, EUT Flat
2708.150	45.8	-0.2	1.6	349.0	3.0	0.0	Vert	PK	0.0	45.6	74.0	-28.4	Low Ch 5, EUT on End
2781.780	45.4	-0.1	1.6	339.0	3.0	0.0	Horz	PK	0.0	45.3	74.0	-28.7	High Ch 54, EUT Flat
3610.775	41.7	3.3	1.6	74.0	3.0	0.0	Horz	PK	0.0	45.0	74.0	-29.0	Low Ch 5, EUT Flat
2708.275	43.7	-0.2	1.6	151.0	3.0	0.0	Horz	PK	0.0	43.5	74.0	-30.5	Low Ch 5, EUT on Side

SPURIOUS RADIATED EMISSIONS (Config 10 - 12.5dBi Antenna)

PSA-ESCI 2017.09.18

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting at Default Power Setting = 26 dBm, Antenna Port 4, PRASK Modulation

MODES OF OPERATION

Low Channel 5, 902.75 MHz
Mid Channel 30, 915.25 MHz
High Channel 54, 927.25 MHz

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INMC1093 - 10

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	12400 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFE	24-Jun-2017	12 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HHO	17-Apr-2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50114	HFN	13-Dec-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFF	13-Dec-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50003	LFE	19-Oct-2017	12 mo
Antenna - Standard Gain	EMCO	3160-07	AHP	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHM	10-Jun-2016	24 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYL	11-Aug-2017	24 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	18-Aug-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVZ	19-May-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAB	11-Jul-2017	12 mo
Cable	Element	Standard Gain Horn Cable	NC3	19-May-2017	12 mo
Cable	Element	3115 Horn Cable	NC2	19-May-2017	12 mo
Cable	Element	Bilog Cables	NC1	11-Jul-2017	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

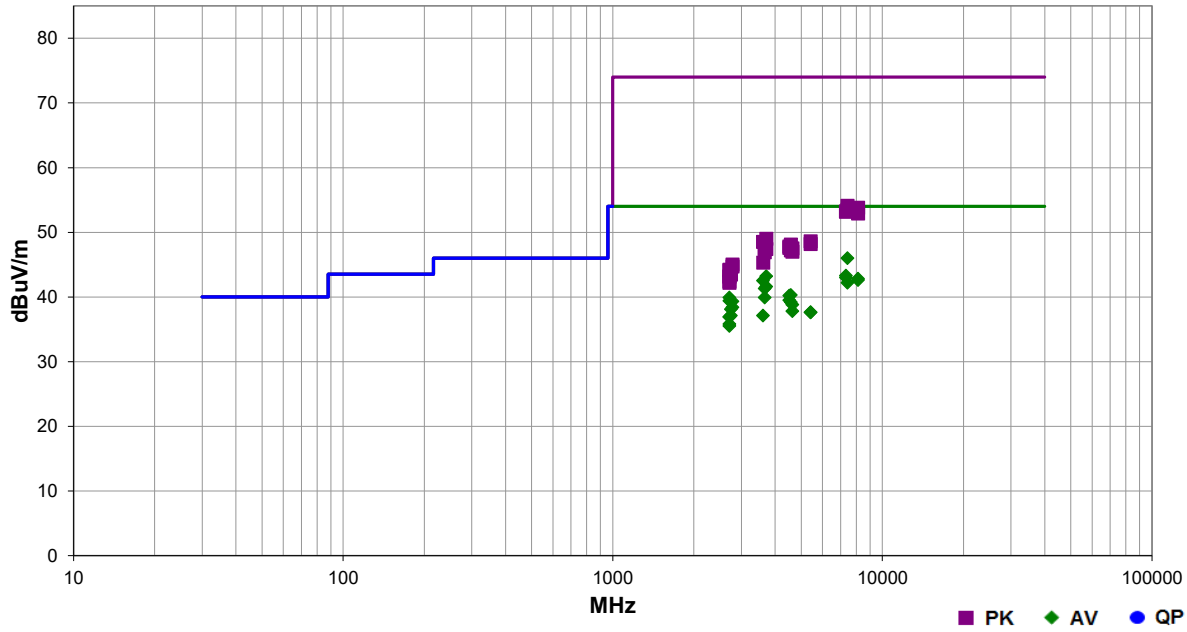
SPURIOUS RADIATED EMISSIONS (Config 10 - 12.5dBi Antenna)

EmiR5 2017.09.18.2 PSA-ESCI 2017.09.18

Work Order:	INMC1093	**Date:**	22-Feb-2018		
Project:	None	**Temperature:**	23.6 °C		
Job Site:	NC01	**Humidity:**	16.4% RH		
Serial Number:	17211163003	**Barometric Pres.:**	1028 mbar	**Tested by:**	Richard Mellroth
EUT:	IM14				
Configuration:	10				
Customer:	Honeywell Safety and Productivity Solutions				
Attendees:	Sean MacKellar				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at Default Power Setting = 26 dBm, Antenna Port 4, PRASK Modulation. See comments next to data points for EUT channel and orientation.				
Deviations:	None				
Comments:	12.5dBi Linear Antenna.				

Test Specifications	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

Run #	73	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7418.020	32.0	14.0	3.1	71.0	3.0	0.0	Vert	AV	0.0	46.0	54.0	-8.0	High Ch 54, EUT Flat
7322.000	29.8	13.5	2.4	25.0	3.0	0.0	Horz	AV	0.0	43.3	54.0	-10.7	Mid Ch 30, EUT on Side
3709.055	39.3	3.9	2.9	352.0	3.0	0.0	Horz	AV	0.0	43.2	54.0	-10.8	High Ch 54, EUT on Side
7321.995	29.5	13.5	1.6	294.0	3.0	0.0	Vert	AV	0.0	43.0	54.0	-11.0	Mid Ch 30, EUT Flat
8124.835	27.9	14.9	1.6	27.0	3.0	0.0	Horz	AV	0.0	42.8	54.0	-11.2	Low Ch 5, EUT on Side
8124.850	27.7	14.9	1.6	236.0	3.0	0.0	Vert	AV	0.0	42.6	54.0	-11.4	Low Ch 5, EUT Flat
3611.080	39.2	3.3	3.1	85.0	3.0	0.0	Vert	AV	0.0	42.5	54.0	-11.5	Low Ch 5, EUT Flat
7418.040	28.2	14.0	1.6	16.0	3.0	0.0	Horz	AV	0.0	42.2	54.0	-11.8	High Ch 54, EUT on Side
3709.025	37.7	3.9	3.0	42.0	3.0	0.0	Vert	AV	0.0	41.6	54.0	-12.4	High Ch 54, EUT Flat
3661.115	37.6	3.7	3.5	77.0	3.0	0.0	Vert	AV	0.0	41.3	54.0	-12.7	Mid Ch 30, EUT Flat
4576.350	32.9	7.4	1.5	353.0	3.0	0.0	Horz	AV	0.0	40.3	54.0	-13.7	Mid Ch 30, EUT on Side
4513.805	32.9	7.3	2.4	16.0	3.0	0.0	Horz	AV	0.0	40.2	54.0	-13.8	Low Ch 5, EUT on Side
2708.325	40.1	-0.2	1.1	36.0	3.0	0.0	Horz	AV	0.0	39.9	54.0	-14.1	Low Ch 5, EUT on Side
3661.060	36.2	3.7	1.6	2.0	3.0	0.0	Horz	AV	0.0	39.9	54.0	-14.1	Mid Ch 30, EUT on Side
4513.760	32.2	7.3	1.6	307.0	3.0	0.0	Vert	AV	0.0	39.5	54.0	-14.5	Low Ch 5, EUT Flat
2708.255	39.6	-0.2	1.6	33.0	3.0	0.0	Horz	AV	0.0	39.4	54.0	-14.6	Low Ch 5, EUT on End
2781.720	39.4	-0.1	3.3	31.0	3.0	0.0	Vert	AV	0.0	39.3	54.0	-14.7	High Ch 54, EUT Flat
4576.310	31.8	7.4	1.6	316.0	3.0	0.0	Vert	AV	0.0	39.2	54.0	-14.8	Mid Ch 30, EUT Flat

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4636.345	31.2	7.6	1.6	9.0	3.0	0.0	Horz	AV	0.0	38.8	54.0	-15.2	High Ch 54, EUT on Side
2781.710	38.5	-0.1	1.2	293.0	3.0	0.0	Horz	AV	0.0	38.4	54.0	-15.6	High Ch 54, EUT on Side
2745.720	38.3	-0.2	1.3	15.0	3.0	0.0	Vert	AV	0.0	38.1	54.0	-15.9	Mid Ch 30, EUT Flat
4636.285	30.2	7.6	1.7	103.0	3.0	0.0	Vert	AV	0.0	37.8	54.0	-16.2	High Ch 54, EUT Flat
5416.675	27.6	10.0	1.9	351.0	3.0	0.0	Horz	AV	0.0	37.6	54.0	-16.4	Low Ch 5, EUT on Side
5416.435	27.6	10.0	2.1	252.0	3.0	0.0	Vert	AV	0.0	37.6	54.0	-16.4	Low Ch 5, EUT Flat
3611.130	33.8	3.3	1.6	73.0	3.0	0.0	Horz	AV	0.0	37.1	54.0	-16.9	Low Ch 5, EUT on Side
2745.800	37.3	-0.2	3.9	296.0	3.0	0.0	Horz	AV	0.0	37.1	54.0	-16.9	Mid Ch 30, EUT on Side
2708.285	37.1	-0.2	1.7	21.0	3.0	0.0	Vert	AV	0.0	36.9	54.0	-17.1	Low Ch 5, EUT Flat
2708.265	37.1	-0.2	1.6	43.0	3.0	0.0	Vert	AV	0.0	36.9	54.0	-17.1	Low Ch 5, EUT on Side
2708.270	36.0	-0.2	2.0	283.0	3.0	0.0	Horz	AV	0.0	35.8	54.0	-18.2	Low Ch 5, EUT Flat
2708.260	35.7	-0.2	1.6	8.0	3.0	0.0	Vert	AV	0.0	35.5	54.0	-18.5	Low Ch 5, EUT on End
7418.540	40.1	14.0	3.1	71.0	3.0	0.0	Vert	PK	0.0	54.1	74.0	-19.9	High Ch 54, EUT Flat
8123.930	38.9	14.9	1.6	236.0	3.0	0.0	Vert	PK	0.0	53.8	74.0	-20.2	Low Ch 5, EUT Flat
7417.770	39.5	14.0	1.6	16.0	3.0	0.0	Horz	PK	0.0	53.5	74.0	-20.5	High Ch 54, EUT on Side
7322.435	39.7	13.5	1.6	294.0	3.0	0.0	Vert	PK	0.0	53.2	74.0	-20.8	Mid Ch 30, EUT Flat
7321.950	39.7	13.5	2.4	25.0	3.0	0.0	Horz	PK	0.0	53.2	74.0	-20.8	Mid Ch 30, EUT on Side
8123.320	38.0	14.9	1.6	27.0	3.0	0.0	Horz	PK	0.0	52.9	74.0	-21.1	Low Ch 5, EUT on Side
3708.960	45.1	3.9	2.9	352.0	3.0	0.0	Horz	PK	0.0	49.0	74.0	-25.0	High Ch 54, EUT on Side
5416.380	38.6	10.0	2.1	252.0	3.0	0.0	Vert	PK	0.0	48.6	74.0	-25.4	Low Ch 5, EUT Flat
3611.075	45.2	3.3	3.1	85.0	3.0	0.0	Vert	PK	0.0	48.5	74.0	-25.5	Low Ch 5, EUT Flat
5415.930	38.2	10.0	1.9	351.0	3.0	0.0	Horz	PK	0.0	48.2	74.0	-25.8	Low Ch 5, EUT on Side
4575.930	40.7	7.4	1.5	353.0	3.0	0.0	Horz	PK	0.0	48.1	74.0	-25.9	Mid Ch 30, EUT on Side
4513.755	40.5	7.3	1.6	307.0	3.0	0.0	Vert	PK	0.0	47.8	74.0	-26.2	Low Ch 5, EUT Flat
4513.790	40.3	7.3	2.4	16.0	3.0	0.0	Horz	PK	0.0	47.6	74.0	-26.4	Low Ch 5, EUT on Side
3661.025	43.8	3.7	3.5	77.0	3.0	0.0	Vert	PK	0.0	47.5	74.0	-26.5	Mid Ch 30, EUT Flat
4636.430	39.9	7.6	1.6	9.0	3.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	High Ch 54, EUT on Side
3708.660	43.5	3.9	3.0	42.0	3.0	0.0	Vert	PK	0.0	47.4	74.0	-26.6	High Ch 54, EUT Flat
4576.255	39.8	7.4	1.6	316.0	3.0	0.0	Vert	PK	0.0	47.2	74.0	-26.8	Mid Ch 30, EUT Flat
4636.435	39.4	7.6	1.7	103.0	3.0	0.0	Vert	PK	0.0	47.0	74.0	-27.0	High Ch 54, EUT Flat
3660.860	43.2	3.7	1.6	2.0	3.0	0.0	Horz	PK	0.0	46.9	74.0	-27.1	Mid Ch 30, EUT on Side
3611.265	42.0	3.3	1.6	73.0	3.0	0.0	Horz	PK	0.0	45.3	74.0	-28.7	Low Ch 5, EUT on Side
2781.755	45.1	-0.1	3.3	31.0	3.0	0.0	Vert	PK	0.0	45.0	74.0	-29.0	High Ch 54, EUT Flat
2781.380	44.8	-0.1	1.2	293.0	3.0	0.0	Horz	PK	0.0	44.7	74.0	-29.3	High Ch 54, EUT on Side
2708.315	44.4	-0.2	1.1	36.0	3.0	0.0	Horz	PK	0.0	44.2	74.0	-29.8	Low Ch 5, EUT on Side
2708.240	44.3	-0.2	1.6	33.0	3.0	0.0	Horz	PK	0.0	44.1	74.0	-29.9	Low Ch 5, EUT on End
2746.060	43.7	-0.2	1.3	15.0	3.0	0.0	Vert	PK	0.0	43.5	74.0	-30.5	Mid Ch 30, EUT Flat
2745.940	43.7	-0.2	3.9	296.0	3.0	0.0	Horz	PK	0.0	43.5	74.0	-30.5	Mid Ch 30, EUT on Side
2708.135	43.4	-0.2	1.6	43.0	3.0	0.0	Vert	PK	0.0	43.2	74.0	-30.8	Low Ch 5, EUT on Side
2708.550	43.3	-0.2	1.7	21.0	3.0	0.0	Vert	PK	0.0	43.1	74.0	-30.9	Low Ch 5, EUT Flat
2707.900	42.6	-0.2	2.0	283.0	3.0	0.0	Horz	PK	0.0	42.4	74.0	-31.6	Low Ch 5, EUT Flat
2707.815	42.4	-0.2	1.6	8.0	3.0	0.0	Vert	PK	0.0	42.2	74.0	-31.8	Low Ch 5, EUT on End

SPURIOUS RADIATED EMISSIONS (Config 11 - 8dBi Antenna)

PSA-ESCI 2017.12.19

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting at Default Power Setting = 29 dBm, Antenna Port 4, PRASK Modulation

CHANNELS TESTED

Low Channel 5, 902.75 MHz
Mid Channel 30, 915.25 MHz
High Channel 54, 927.25 MHz

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INMC1093 - 11

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	12400 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFE	24-Jun-2017	12 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HHO	17-Apr-2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50114	HFN	13-Dec-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFF	13-Dec-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50003	LFE	19-Oct-2017	12 mo
Antenna - Standard Gain	EMCO	3160-07	AHP	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHM	10-Jun-2016	24 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYL	11-Aug-2017	24 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	18-Aug-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVZ	19-May-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAB	11-Jul-2017	12 mo
Cable	Element	Standard Gain Horn Cable	NC3	19-May-2017	12 mo
Cable	Element	3115 Horn Cable	NC2	19-May-2017	12 mo
Cable	Element	Bilog Cables	NC1	11-Jul-2017	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.
For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements. If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

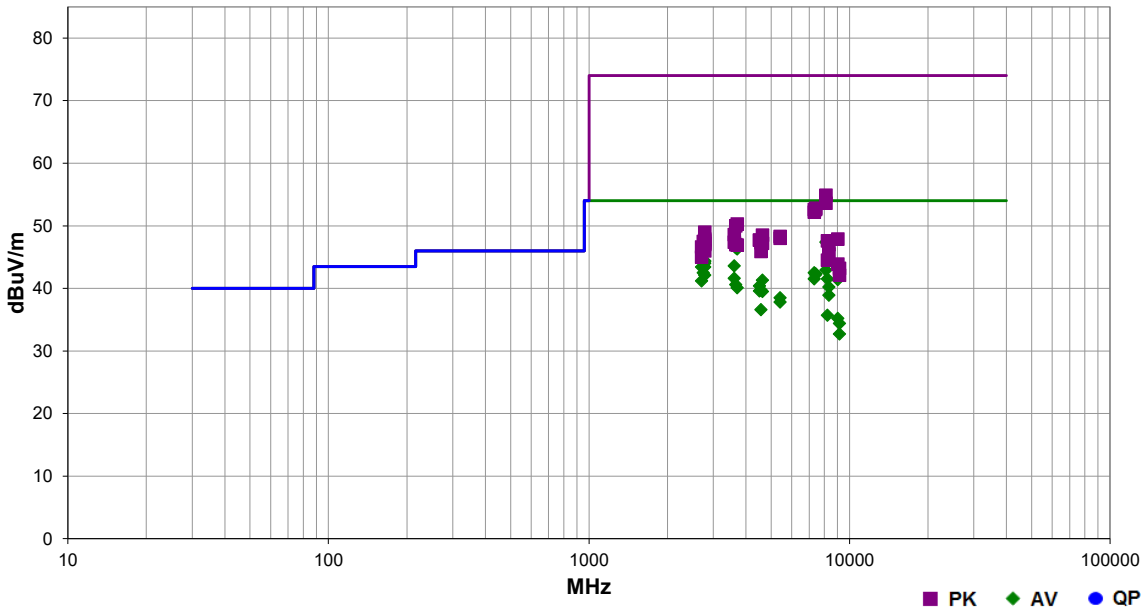
SPURIOUS RADIATED EMISSIONS (Config 11 - 8dBi Antenna)

EmiR5 2018.02.06 PSA-ESCI 2017.12.19

Work Order:	INMC1093	**Date:**	21-Mar-2018		
Project:	None	**Temperature:**	25.7 °C		
Job Site:	NC01	**Humidity:**	22.5% RH		
Serial Number:	1721163003	**Barometric Pres.:**	1010 mbar	**Tested by:**	Richard Mellroth
EUT:	IM14				
Configuration:	11				
Customer:	Honeywell Safety and Productivity Solutions				
Attendees:	Sean MacKellar				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at Default Power Setting = 29 dBm, Antenna Port 4, PRASK Modulation. See comments next to data points for EUT channel and orientation.				
Deviations:	None				
Comments:	8dBi Linear Panel Antenna				

Test Specifications	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

Run #	5,6	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
8124.835	32.5	14.9	1.7	86.0	3.0	0.0	Horz	AV	0.0	47.4	54.0	-6.6	Low Channel 5, EUT on End
3661.025	42.8	3.7	2.0	82.0	3.0	0.0	Horz	AV	0.0	46.5	54.0	-7.5	Mid Channel 30, EUT on End
2781.760	46.5	-0.1	2.6	81.0	3.0	0.0	Horz	AV	0.0	46.4	54.0	-7.6	High Channel 54, EUT on End
3709.010	42.4	3.9	2.0	82.0	3.0	0.0	Horz	AV	0.0	46.3	54.0	-7.7	High Channel 54, EUT on End
2781.800	44.5	-0.1	1.3	24.0	3.0	0.0	Vert	AV	0.0	44.4	54.0	-9.6	High Channel 54, EUT Flat
2781.805	44.4	-0.1	1.8	18.0	3.0	0.0	Horz	AV	0.0	44.3	54.0	-9.7	High Channel 54, EUT on Side
2745.765	44.4	-0.2	1.6	82.0	3.0	0.0	Horz	AV	0.0	44.2	54.0	-9.8	Mid Channel 30, EUT on End
2781.830	44.1	-0.1	1.6	25.0	3.0	0.0	Vert	AV	0.0	44.0	54.0	-10.0	High Channel 54, EUT on Side
3611.050	40.3	3.3	1.7	103.0	3.0	0.0	Horz	AV	0.0	43.6	54.0	-10.4	Low Channel 5, EUT on End
2781.720	43.5	-0.1	2.0	6.0	3.0	0.0	Vert	AV	0.0	43.4	54.0	-10.6	High Channel 54, EUT on End
2708.270	43.6	-0.2	1.6	122.0	3.0	0.0	Horz	AV	0.0	43.4	54.0	-10.6	Low Channel 5, EUT on End
8124.750	28.0	14.9	1.6	58.0	3.0	0.0	Vert	AV	0.0	42.9	54.0	-11.1	Low Channel 5, EUT Flat
2745.810	42.7	-0.2	1.0	29.0	3.0	0.0	Vert	AV	0.0	42.5	54.0	-11.5	Mid Channel 30, EUT Flat
7322.065	29.0	13.5	3.4	154.0	3.0	0.0	Vert	AV	0.0	42.5	54.0	-11.5	Mid Channel 30, EUT Flat
7417.915	28.3	14.0	2.8	350.0	3.0	0.0	Vert	AV	0.0	42.3	54.0	-11.7	High Channel 54, EUT Flat
7418.025	28.2	14.0	1.6	164.0	3.0	0.0	Horz	AV	0.0	42.2	54.0	-11.8	High Channel 54, EUT on End
2781.755	42.2	-0.1	3.2	200.0	3.0	0.0	Horz	AV	0.0	42.1	54.0	-11.9	High Channel 54, EUT Flat
3611.020	38.3	3.3	3.1	92.0	3.0	0.0	Vert	AV	0.0	41.6	54.0	-12.4	Low Channel 5, EUT Flat
7321.680	28.0	13.5	1.6	200.0	3.0	0.0	Horz	AV	0.0	41.5	54.0	-12.5	Mid Channel 30, EUT on End
8237.285	46.7	-5.2	1.6	87.0	3.0	0.0	Horz	AV	0.0	41.5	54.0	-12.5	Mid Channel 30, EUT on End
9027.575	45.8	-4.4	2.1	111.0	3.0	0.0	Horz	AV	0.0	41.4	54.0	-12.6	Low Channel 5, EUT on End
4636.335	33.7	7.6	3.0	82.0	3.0	0.0	Horz	AV	0.0	41.3	54.0	-12.7	High Channel 54, EUT on End

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2708.190	41.4	-0.2	1.1	9.0	3.0	0.0	Vert	AV	0.0	41.2	54.0	-12.8	Low Channel 5, EUT Flat
3661.060	36.9	3.7	1.6	49.0	3.0	0.0	Vert	AV	0.0	40.6	54.0	-13.4	Mid Channel 30, EUT Flat
4513.825	33.1	7.3	1.1	4.0	3.0	0.0	Vert	AV	0.0	40.4	54.0	-13.6	Low Channel 5, EUT Flat
8345.295	45.3	-5.1	1.6	89.0	3.0	0.0	Horz	AV	0.0	40.2	54.0	-13.8	High Channel 54, EUT on End
3709.035	36.2	3.9	1.2	51.0	3.0	0.0	Vert	AV	0.0	40.1	54.0	-13.9	High Channel 54, EUT Flat
4576.395	32.3	7.4	3.1	120.0	3.0	0.0	Vert	AV	0.0	39.7	54.0	-14.3	Mid Channel 30, EUT Flat
4513.920	32.3	7.3	1.1	148.0	3.0	0.0	Horz	AV	0.0	39.6	54.0	-14.4	Low Channel 5, EUT on End
4636.280	31.9	7.6	1.6	238.0	3.0	0.0	Vert	AV	0.0	39.5	54.0	-14.5	High Channel 54, EUT Flat
8345.245	44.0	-5.1	3.2	109.0	3.0	0.0	Vert	AV	0.0	38.9	54.0	-15.1	High Channel 54, EUT Flat
5416.480	28.5	10.0	2.4	143.0	3.0	0.0	Horz	AV	0.0	38.5	54.0	-15.5	Low Channel 5, EUT on End
5416.340	27.8	10.0	2.7	222.0	3.0	0.0	Vert	AV	0.0	37.8	54.0	-16.2	Low Channel 5, EUT Flat
4576.225	29.2	7.4	1.6	11.0	3.0	0.0	Horz	AV	0.0	36.6	54.0	-17.4	Mid Channel 30, EUT on End
8237.305	40.9	-5.2	1.5	110.0	3.0	0.0	Vert	AV	0.0	35.7	54.0	-18.3	Mid Channel 30, EUT Flat
9027.555	39.6	-4.4	2.7	43.0	3.0	0.0	Vert	AV	0.0	35.2	54.0	-18.8	Low Channel 5, EUT Flat
8124.610	40.0	14.9	1.7	86.0	3.0	0.0	Horz	PK	0.0	54.9	74.0	-19.1	Low Channel 5, EUT on End
9152.530	38.4	-4.0	1.3	127.0	3.0	0.0	Horz	AV	0.0	34.4	54.0	-19.6	Mid Channel 30, EUT on End
8125.165	38.7	14.9	1.6	58.0	3.0	0.0	Vert	PK	0.0	53.6	74.0	-20.4	Low Channel 5, EUT Flat
7417.760	38.8	14.0	2.8	350.0	3.0	0.0	Vert	PK	0.0	52.8	74.0	-21.2	High Channel 54, EUT Flat
9152.510	36.7	-4.0	2.7	45.0	3.0	0.0	Vert	AV	0.0	32.7	54.0	-21.3	Mid Channel 30, EUT Flat
7416.755	38.6	14.0	1.6	164.0	3.0	0.0	Horz	PK	0.0	52.6	74.0	-21.4	High Channel 54, EUT on End
7322.600	39.1	13.5	1.6	200.0	3.0	0.0	Horz	PK	0.0	52.6	74.0	-21.4	Mid Channel 30, EUT on End
7321.500	38.7	13.5	3.4	154.0	3.0	0.0	Vert	PK	0.0	52.2	74.0	-21.8	Mid Channel 30, EUT Flat
3708.925	46.4	3.9	2.0	82.0	3.0	0.0	Horz	PK	0.0	50.3	74.0	-23.7	High Channel 54, EUT on End
3661.005	46.3	3.7	2.0	82.0	3.0	0.0	Horz	PK	0.0	50.0	74.0	-24.0	Mid Channel 30, EUT on End
2781.710	49.1	-0.1	2.6	81.0	3.0	0.0	Horz	PK	0.0	49.0	74.0	-25.0	High Channel 54, EUT on End
3610.970	45.3	3.3	1.7	103.0	3.0	0.0	Horz	PK	0.0	48.6	74.0	-25.4	Low Channel 5, EUT on End
4636.010	40.9	7.6	3.0	82.0	3.0	0.0	Horz	PK	0.0	48.5	74.0	-25.5	High Channel 54, EUT on End
5416.650	38.3	10.0	2.4	143.0	3.0	0.0	Horz	PK	0.0	48.3	74.0	-25.7	Low Channel 5, EUT on End
5415.825	38.0	10.0	2.7	222.0	3.0	0.0	Vert	PK	0.0	48.0	74.0	-26.0	Low Channel 5, EUT Flat
2781.895	48.0	-0.1	1.8	18.0	3.0	0.0	Horz	PK	0.0	47.9	74.0	-26.1	High Channel 54, EUT on Side
9027.480	52.3	-4.4	2.1	111.0	3.0	0.0	Horz	PK	0.0	47.9	74.0	-26.1	Low Channel 5, EUT on End
4513.680	40.4	7.3	1.1	148.0	3.0	0.0	Horz	PK	0.0	47.7	74.0	-26.3	Low Channel 5, EUT on End
4513.770	40.4	7.3	1.1	4.0	3.0	0.0	Vert	PK	0.0	47.7	74.0	-26.3	Low Channel 5, EUT Flat
2781.640	47.7	-0.1	1.3	24.0	3.0	0.0	Vert	PK	0.0	47.6	74.0	-26.4	High Channel 54, EUT Flat
8237.180	52.8	-5.2	1.6	87.0	3.0	0.0	Horz	PK	0.0	47.6	74.0	-26.4	Mid Channel 30, EUT on End
2745.980	47.7	-0.2	1.6	82.0	3.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	Mid Channel 30, EUT on End
3611.250	44.1	3.3	3.1	92.0	3.0	0.0	Vert	PK	0.0	47.4	74.0	-26.6	Low Channel 5, EUT Flat
4576.195	39.9	7.4	3.1	120.0	3.0	0.0	Vert	PK	0.0	47.3	74.0	-26.7	Mid Channel 30, EUT Flat
2781.820	47.3	-0.1	1.6	25.0	3.0	0.0	Vert	PK	0.0	47.2	74.0	-26.8	High Channel 54, EUT on Side
4636.720	39.6	7.6	1.6	238.0	3.0	0.0	Vert	PK	0.0	47.2	74.0	-26.8	High Channel 54, EUT Flat
2781.630	47.1	-0.1	2.0	6.0	3.0	0.0	Vert	PK	0.0	47.0	74.0	-27.0	High Channel 54, EUT on End
3661.195	43.3	3.7	1.6	49.0	3.0	0.0	Vert	PK	0.0	47.0	74.0	-27.0	Mid Channel 30, EUT Flat
8345.290	52.1	-5.1	1.6	89.0	3.0	0.0	Horz	PK	0.0	47.0	74.0	-27.0	High Channel 54, EUT on End
3708.770	43.0	3.9	1.2	51.0	3.0	0.0	Vert	PK	0.0	46.9	74.0	-27.1	High Channel 54, EUT Flat
2708.430	46.8	-0.2	1.6	122.0	3.0	0.0	Horz	PK	0.0	46.6	74.0	-27.4	Low Channel 5, EUT on End
2745.765	46.7	-0.2	1.0	29.0	3.0	0.0	Vert	PK	0.0	46.5	74.0	-27.5	Mid Channel 30, EUT Flat
2781.675	46.1	-0.1	3.2	200.0	3.0	0.0	Horz	PK	0.0	46.0	74.0	-28.0	High Channel 54, EUT Flat
4576.125	38.5	7.4	1.6	11.0	3.0	0.0	Horz	PK	0.0	45.9	74.0	-28.1	Mid Channel 30, EUT on End
8345.315	50.6	-5.1	3.2	109.0	3.0	0.0	Vert	PK	0.0	45.5	74.0	-28.5	High Channel 54, EUT Flat
2708.345	45.2	-0.2	1.1	9.0	3.0	0.0	Vert	PK	0.0	45.0	74.0	-29.0	Low Channel 5, EUT Flat
8237.470	49.7	-5.2	1.5	110.0	3.0	0.0	Vert	PK	0.0	44.5	74.0	-29.5	Mid Channel 30, EUT Flat
9027.600	48.3	-4.4	2.7	43.0	3.0	0.0	Vert	PK	0.0	43.9	74.0	-30.1	Low Channel 5, EUT Flat
9152.415	47.2	-4.0	1.3	127.0	3.0	0.0	Horz	PK	0.0	43.2	74.0	-30.8	Mid Channel 30, EUT on End
9152.490	46.1	-4.0	2.7	45.0	3.0	0.0	Vert	PK	0.0	42.1	74.0	-31.9	Mid Channel 30, EUT Flat

DUTY CYCLE

XMit 2017.12.13

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-17	19-May-18
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	20-Apr-17	20-Apr-18
Attenuator	Fairview Microwave	SA4014-20	TKV	9-Mar-17	9-Mar-18
Attenuator	S.M. Electronics	SA18H-10	REJ	10-Aug-17	10-Aug-18
Block - DC	Fairview Microwave	SD3379	AMU	20-Apr-17	20-Apr-18
Generator - Signal	Agilent	N5183A	TIA	6-Apr-16	6-Apr-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE

NweTx 2016.09.14.2 XMit 2017.12.13

EUT:	IM14			Work Order:	INMC1093
Serial Number:	FCC Test Unit 1			Date:	5-Jan-18
Customer:	Honeywell Safety and Productivity Solutions			Temperature:	23 °C
Attendees:	Sean MacKellar			Humidity:	36% RH
Project:	None			Barometric Pres.:	1018 mbar
Tested by:	Richard Mellroth	Power:	12 VDC	Job Site:	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Transmitting at Default Power Setting = 29 dBm

DEVIATIONS FROM TEST STANDARD

None

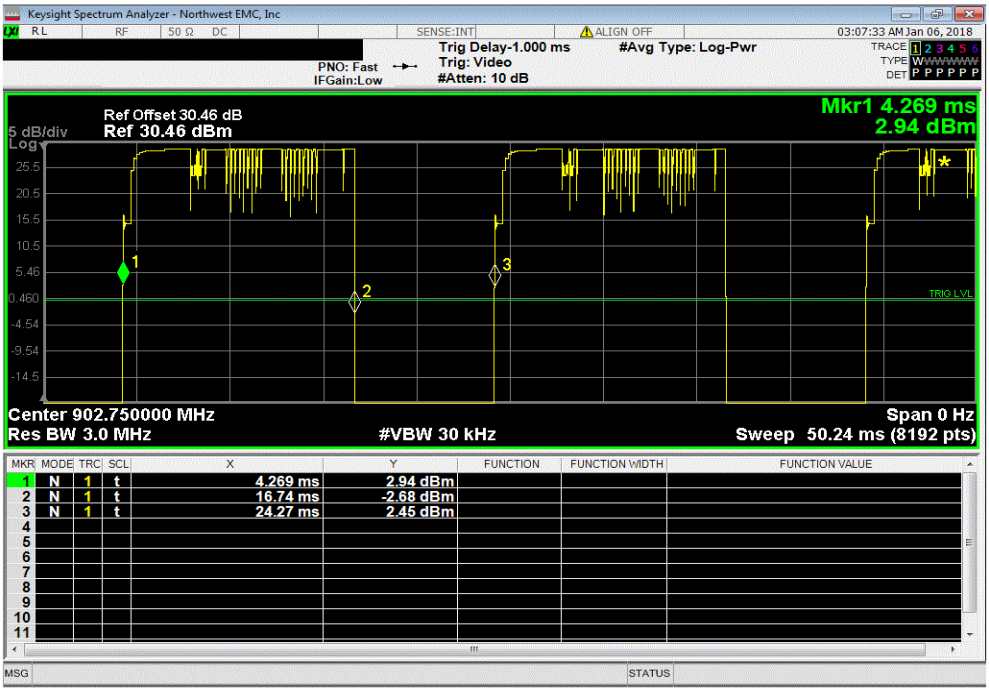
Configuration #	1	Signature

	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
PRASK Modulation						
Antenna Port 4						
Low Channel 5, 902.75 MHz	12.469 ms	20.001 ms	1	62.3	N/A	N/A
Low Channel 5, 902.75 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 30, 915.25 MHz	11.598 ms	20.001 ms	1	58	N/A	N/A
Mid Channel 30, 915.25 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 54, 927.25 MHz	12.496 ms	20.002 ms	1	62.5	N/A	N/A
High Channel 54, 927.25 MHz	N/A	N/A	5	N/A	N/A	N/A

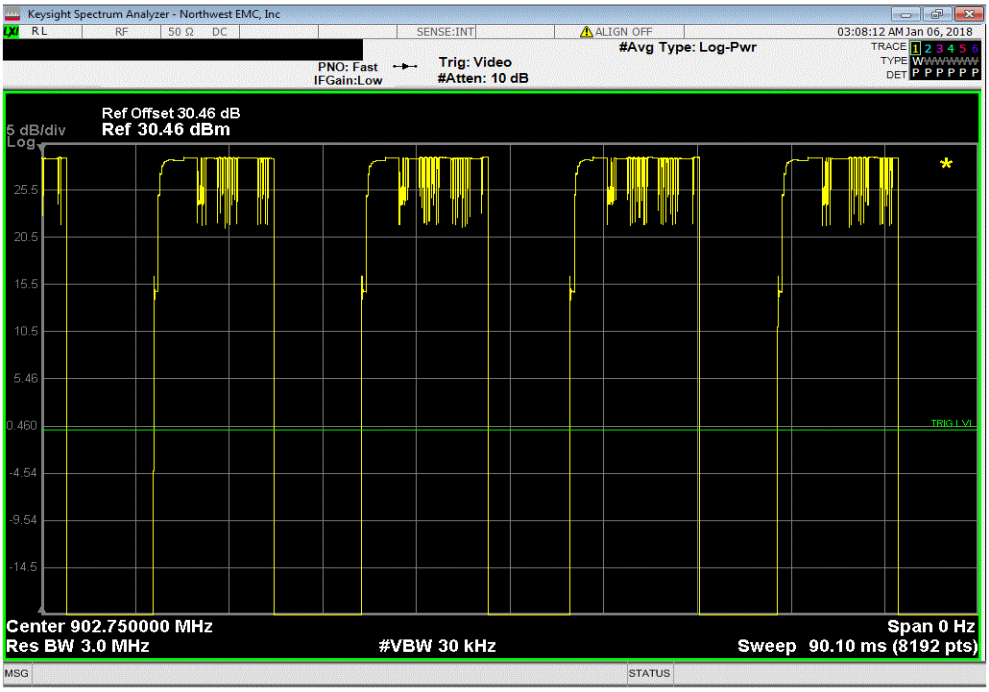
DUTY CYCLE

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Low Channel 5, 902.75 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	12.469 ms	20.001 ms	1	62.3	N/A	N/A



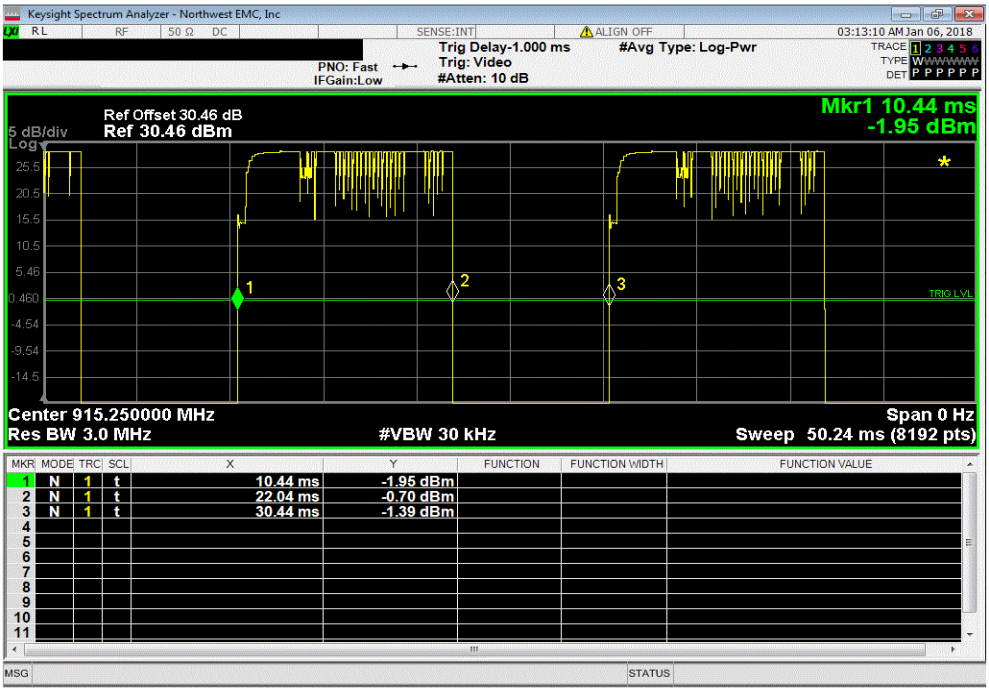
PRASK Modulation, Antenna Port 4, Low Channel 5, 902.75 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



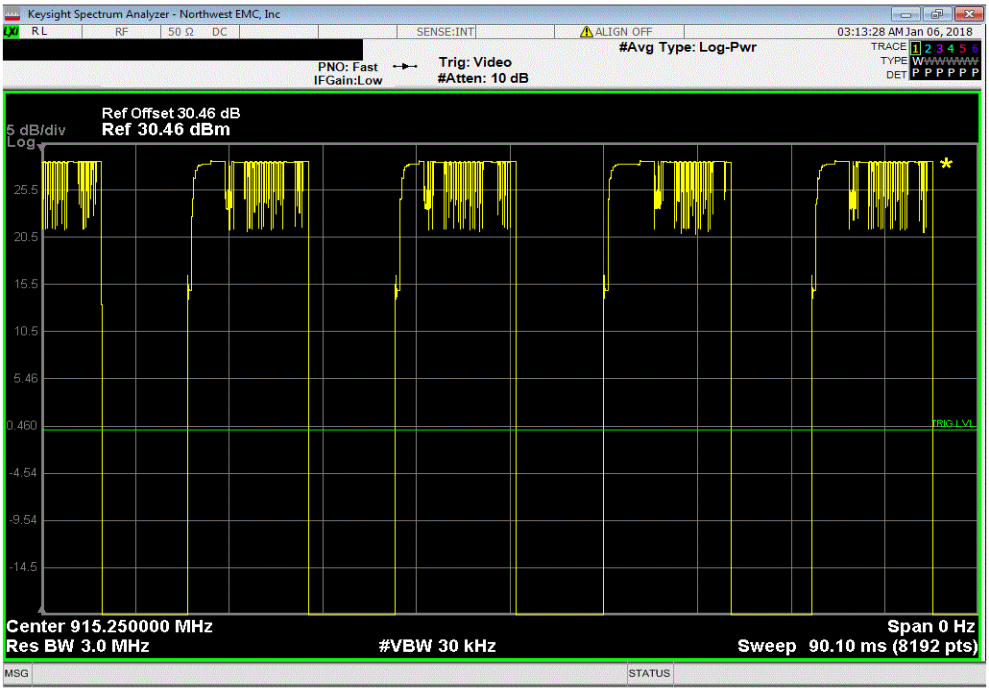
DUTY CYCLE

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Mid Channel 30, 915.25 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	11.598 ms	20.001 ms	1	58	N/A	N/A



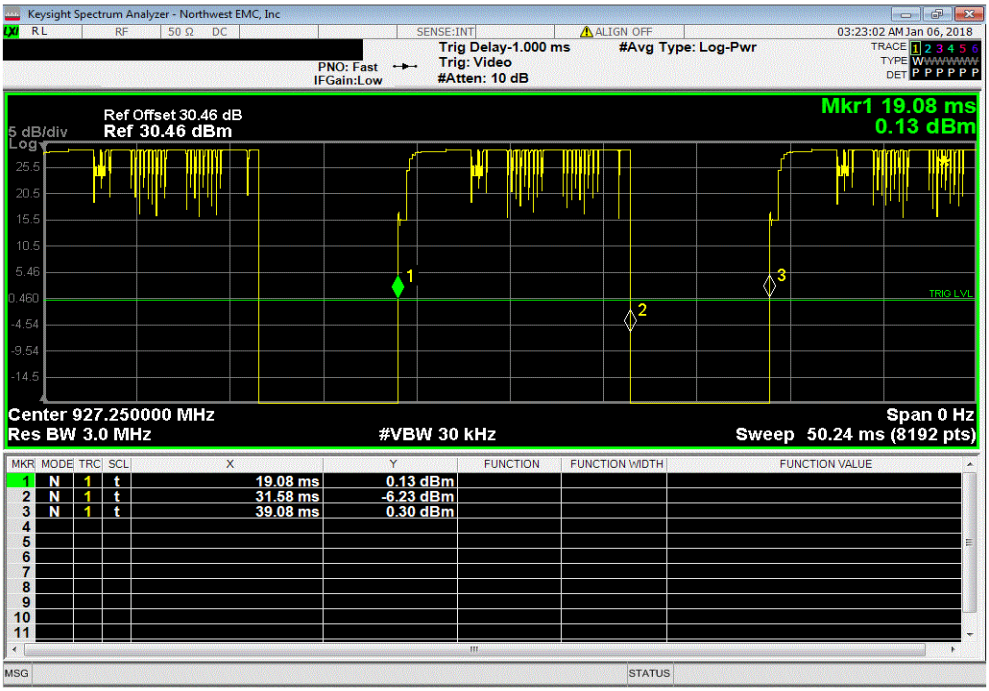
PRASK Modulation, Antenna Port 4, Mid Channel 30, 915.25 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



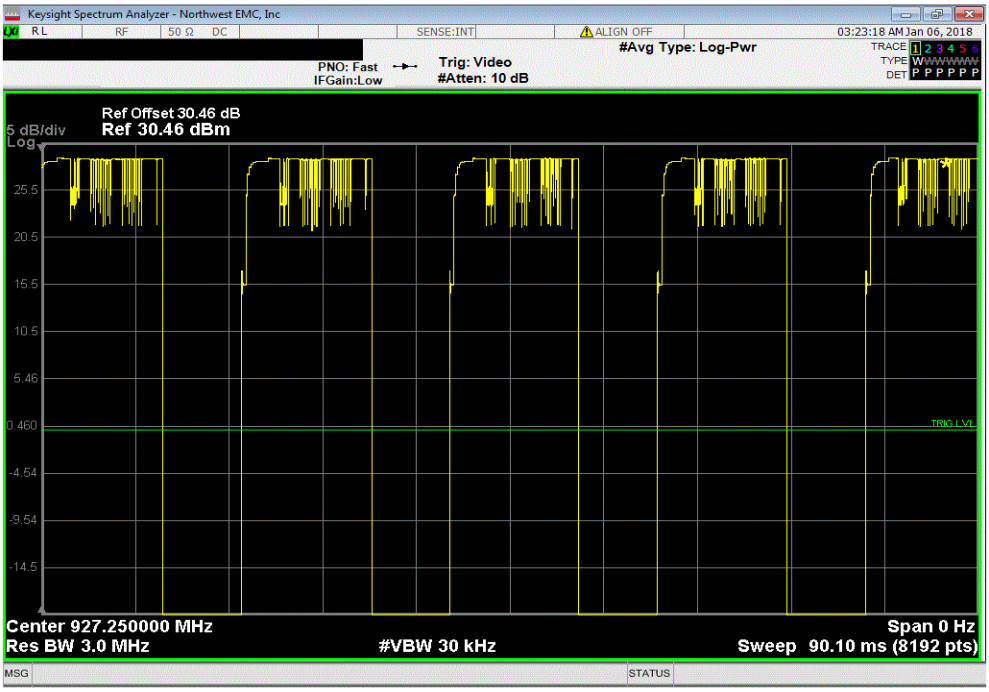
DUTY CYCLE

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, High Channel 54, 927.25 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	12.496 ms	20.002 ms	1	62.5	N/A	N/A



PRASK Modulation, Antenna Port 4, High Channel 54, 927.25 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



CARRIER FREQUENCY SEPARATION

XMit 2017.12.13

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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-17	19-May-18
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	20-Apr-17	20-Apr-18
Attenuator	Fairview Microwave	SA4014-20	TKV	9-Mar-17	9-Mar-18
Attenuator	S.M. Electronics	SA18H-10	REJ	10-Aug-17	10-Aug-18
Block - DC	Fairview Microwave	SD3379	AMU	20-Apr-17	20-Apr-18
Generator - Signal	Agilent	N5183A	TIA	6-Apr-16	6-Apr-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The channel carrier frequencies in the 902-928 MHz band must be separated by 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

CARRIER FREQUENCY SEPARATION

NweTx 2016.09.14.2 XMit 2017.12.13

EUT:	IM14			Work Order:	INMC1093
Serial Number:	FCC Test Unit 1			Date:	5-Jan-18
Customer:	Honeywell Safety and Productivity Solutions			Temperature:	23 °C
Attendees:	Sean MacKellar			Humidity:	36% RH
Project:	None			Barometric Pres.:	1018 mbar
Tested by:	Richard Mellroth	Power:	12 VDC	Job Site:	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Transmitting at Default Power Setting = 29 dBm

DEVIATIONS FROM TEST STANDARD

None

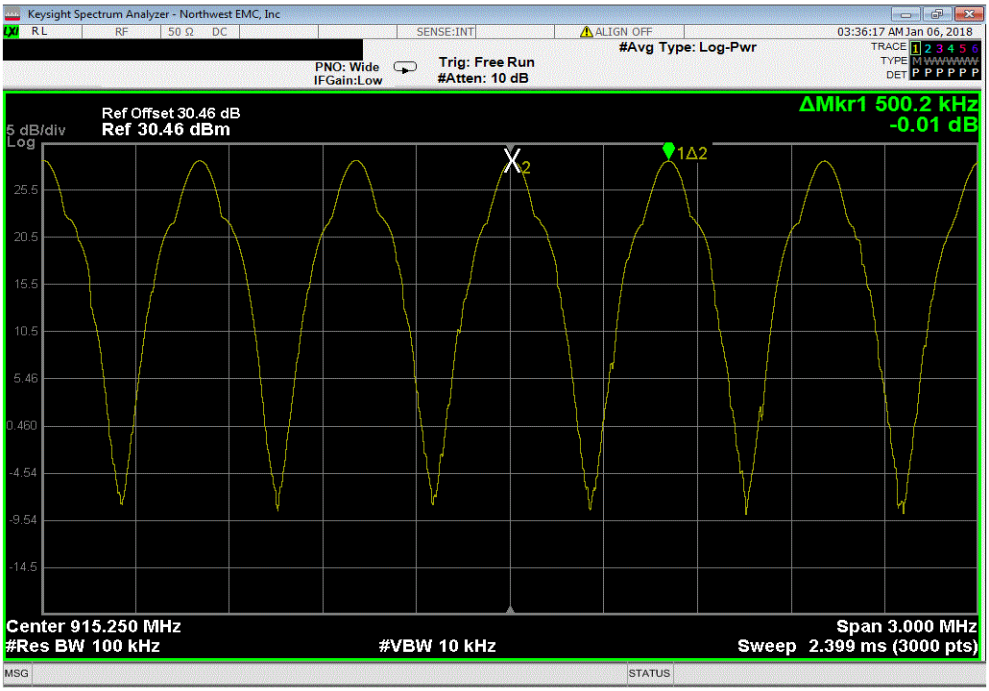
Configuration #	1	Signature

		Value	Limit (≥)	Results
PRASK Modulation				
	Antenna Port 4			
	Hopping Mode	500.2 kHz	250 kHz	Pass

CARRIER FREQUENCY SEPARATION

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Hopping Mode						
				Value	Limit (≥)	Results
				500.2 kHz	250 kHz	Pass



NUMBER OF HOPPING FREQUENCIES

XMit 2017.12.13

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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-17	19-May-18
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	20-Apr-17	20-Apr-18
Attenuator	Fairview Microwave	SA4014-20	TKV	9-Mar-17	9-Mar-18
Attenuator	S.M. Electronics	SA18H-10	REJ	10-Aug-17	10-Aug-18
Block - DC	Fairview Microwave	SD3379	AMU	20-Apr-17	20-Apr-18
Generator - Signal	Agilent	N5183A	TIA	6-Apr-16	6-Apr-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The number of hopping frequencies was measured across the authorized band. The hopping function of the EUT was enabled.

NUMBER OF HOPPING FREQUENCIES

NweTx 2016.09.14.2 XMit 2017.12.13

EUT:	IM14			Work Order:	INMC1093
Serial Number:	FCC Test Unit 1			Date:	5-Jan-18
Customer:	Honeywell Safety and Productivity Solutions			Temperature:	23 °C
Attendees:	Sean MacKellar			Humidity:	36% RH
Project:	None			Barometric Pres.:	1018 mbar
Tested by:	Richard Mellroth	Power:	12 VDC	Job Site:	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Transmitting at Default Power Setting = 29 dBm

DEVIATIONS FROM TEST STANDARD

None

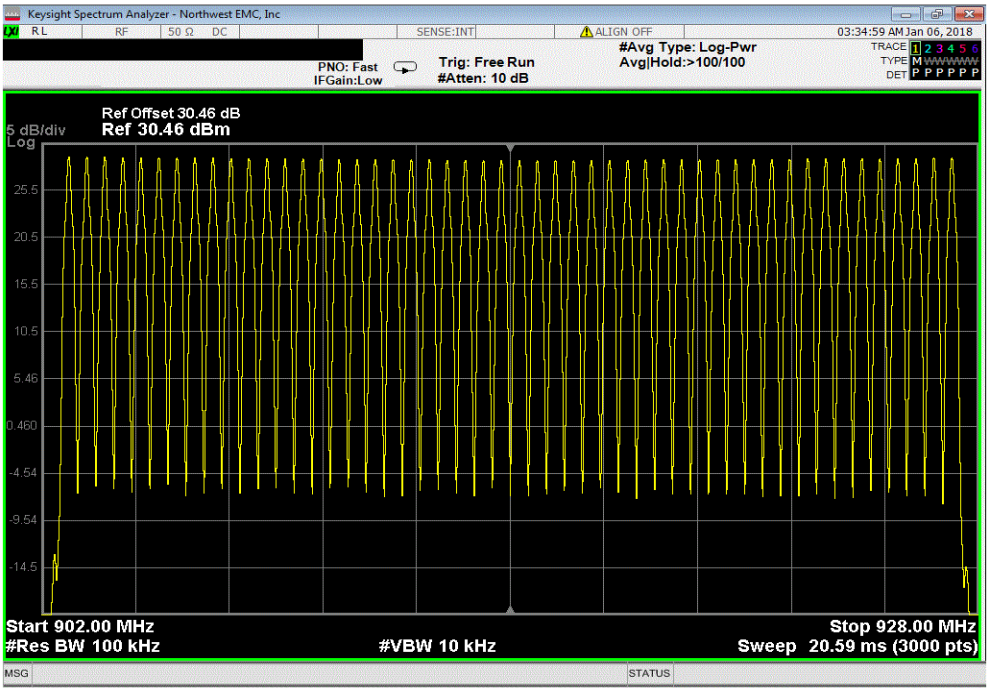
Configuration #	1	Signature

		Number of Channels	Limit	Results
PRASK Modulation				
	Antenna Port 4			
	Hopping Mode	50	≥ 50	Pass

NUMBER OF HOPPING FREQUENCIES

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Hopping Mode						
				Number of Channels	Limit	Results
				50	≥ 50	Pass



DWELL TIME

XMit 2017.12.13

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-17	19-May-18
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	20-Apr-17	20-Apr-18
Attenuator	Fairview Microwave	SA4014-20	TKV	9-Mar-17	9-Mar-18
Attenuator	S.M. Electronics	SA18H-10	REJ	10-Aug-17	10-Aug-18
Block - DC	Fairview Microwave	SD3379	AMU	20-Apr-17	20-Apr-18
Generator - Signal	Agilent	N5183A	TIA	6-Apr-16	6-Apr-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The average dwell time per hopping channel was measured at one hopping channel in the middle of the authorized band. The hopping function of the EUT was enabled.

The dwell time limit is based on the number of hopping channels. For systems using at least 50 hopping frequencies, the average time of occupancy on any frequency shall not be greater than 400 mS within a 20 second period.

DWELL TIME

NweTx 2016.09.14.2 XMit 2017.12.13

EUT:	IM14			Work Order:	INMC1093
Serial Number:	FCC Test Unit 1			Date:	5-Jan-18
Customer:	Honeywell Safety and Productivity Solutions			Temperature:	23 °C
Attendees:	Sean MacKellar			Humidity:	36% RH
Project:	None			Barometric Pres.:	1018 mbar
Tested by:	Richard Mellroth	Power:	12 VDC	Job Site:	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Transmitting at Default Power Setting = 29 dBm

DEVIATIONS FROM TEST STANDARD

None

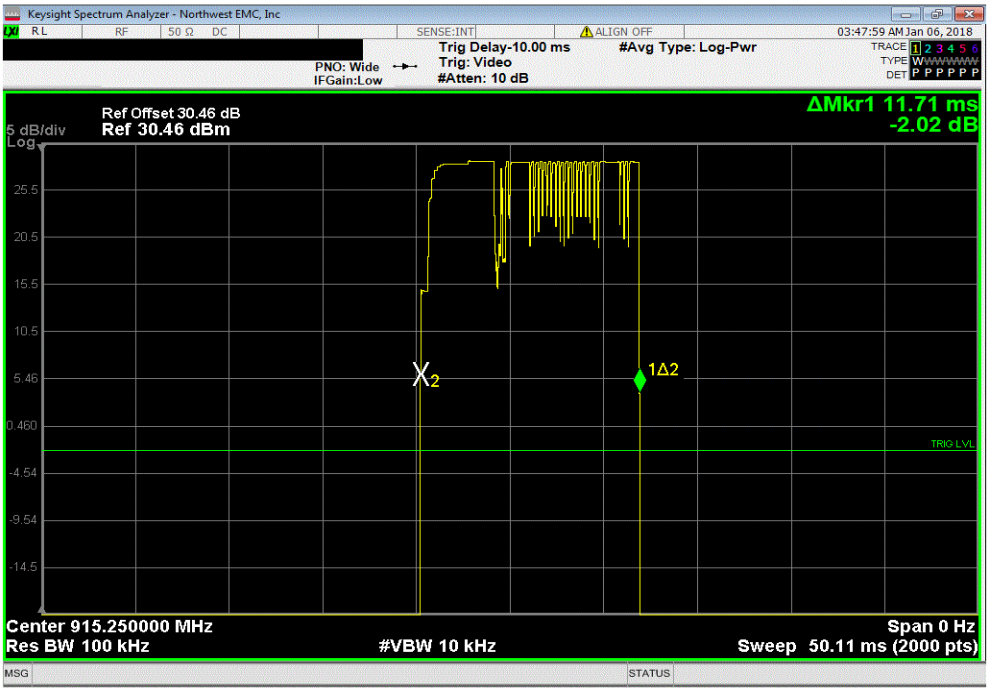
Configuration #	1	Signature

		Pulse Width (ms)	Number of Pulses	Average No. of Pulses	On Time (ms) During 20 s	Limit (ms)	Results
PRASK Modulation							
	Antenna Port 4						
	Hopping Mode	11.706	N/A	N/A	N/A	N/A	N/A
	Hopping Mode	N/A	20	N/A	N/A	N/A	N/A
	Hopping Mode	N/A	20	N/A	N/A	N/A	N/A
	Hopping Mode	N/A	20	N/A	N/A	N/A	N/A
	Hopping Mode	N/A	20	N/A	N/A	N/A	N/A
	Hopping Mode	11.706	N/A	20	234.12	≤ 400	Pass

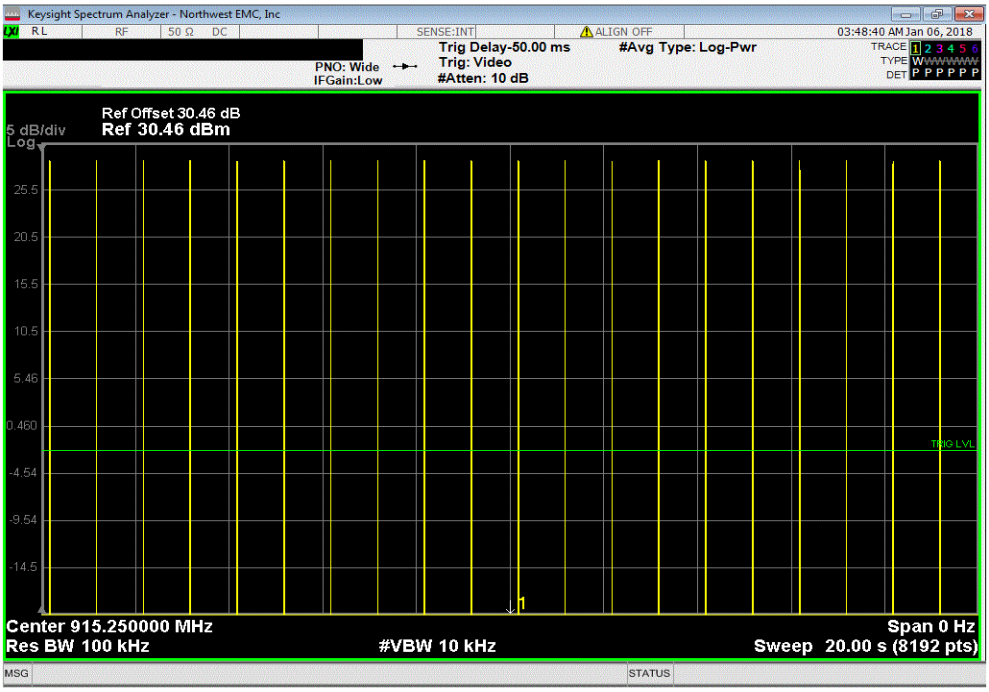
DWELL TIME

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Hopping Mode						
	Pulse Width (ms)	Number of Pulses	Average No. of Pulses	On Time (ms) During 20 s	Limit (ms)	Results
	11.706	N/A	N/A	N/A	N/A	N/A



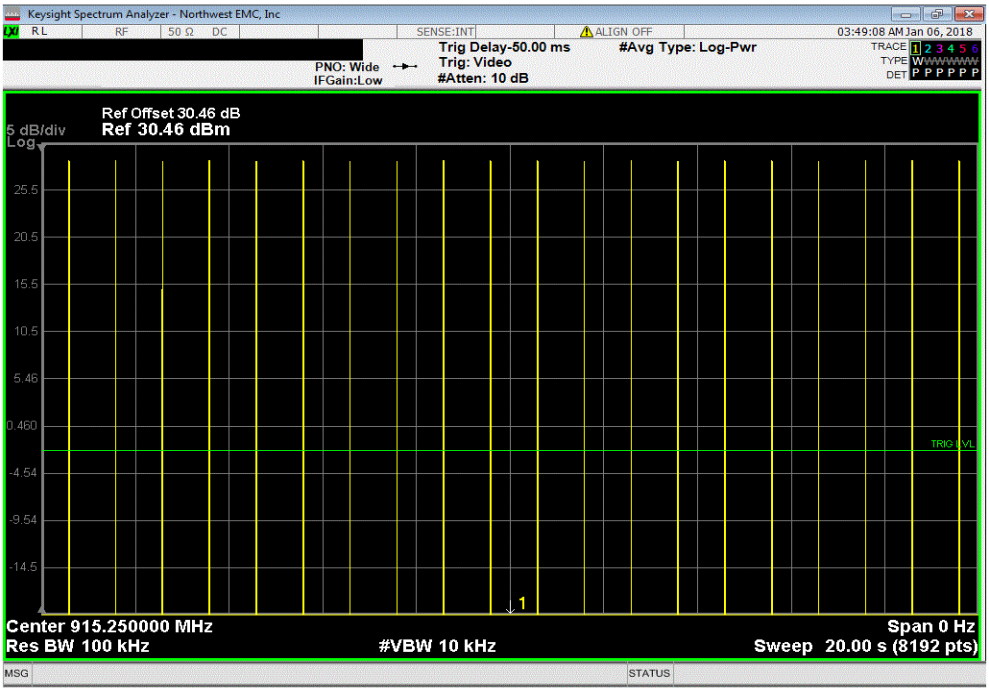
PRASK Modulation, Antenna Port 4, Hopping Mode						
	Pulse Width (ms)	Number of Pulses	Average No. of Pulses	On Time (ms) During 20 s	Limit (ms)	Results
	N/A	20	N/A	N/A	N/A	N/A



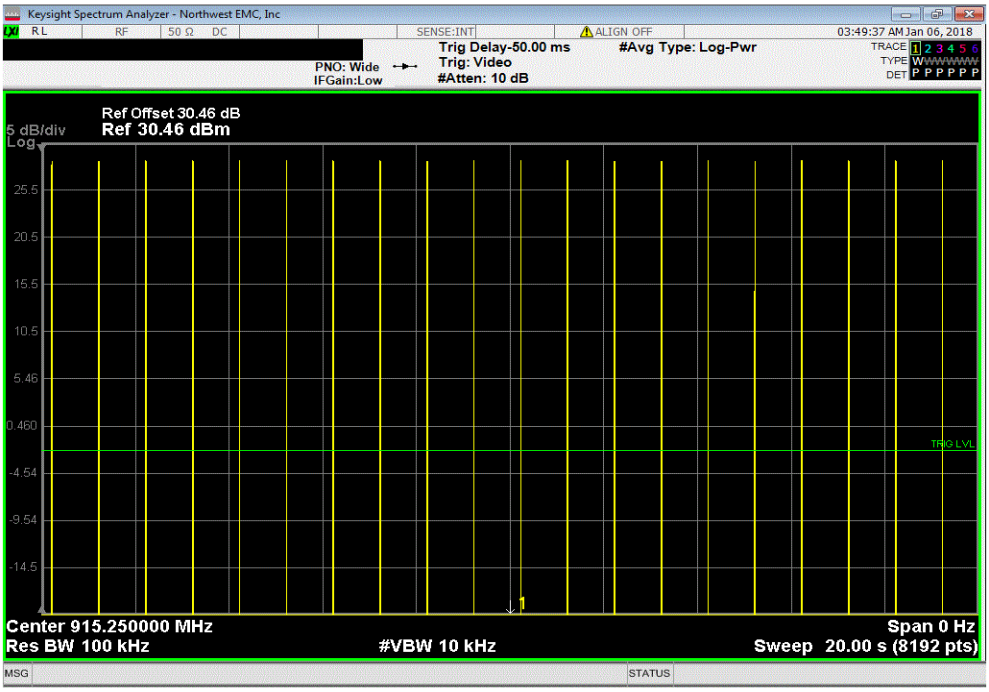
DWELL TIME

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Hopping Mode						
	Pulse Width (ms)	Number of Pulses	Average No. of Pulses	On Time (ms) During 20 s	Limit (ms)	Results
	N/A	20	N/A	N/A	N/A	N/A



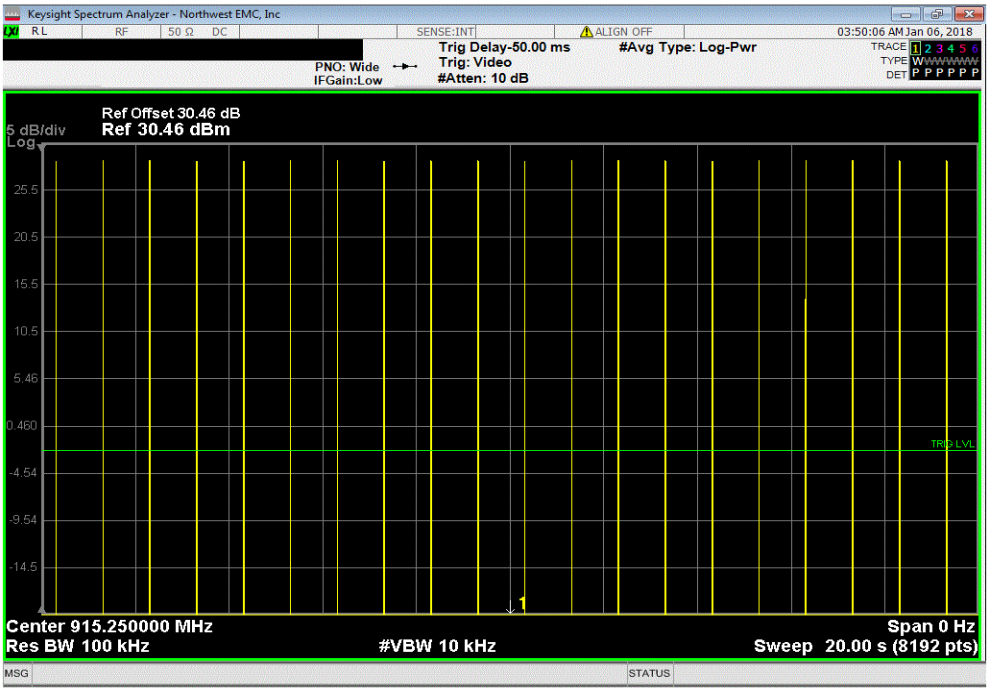
PRASK Modulation, Antenna Port 4, Hopping Mode						
	Pulse Width (ms)	Number of Pulses	Average No. of Pulses	On Time (ms) During 20 s	Limit (ms)	Results
	N/A	20	N/A	N/A	N/A	N/A



DWELL TIME

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Hopping Mode						
	Pulse Width (ms)	Number of Pulses	Average No. of Pulses	On Time (ms) During 20 s	Limit (ms)	Results
	N/A	20	N/A	N/A	N/A	N/A



PRASK Modulation, Antenna Port 4, Hopping Mode						
	Pulse Width (ms)	Number of Pulses	Average No. of Pulses	On Time (ms) During 20 s	Limit (ms)	Results
	11.706	N/A	20	234.12	≤ 400	Pass

Calculation Only

No Screen Capture Required

OUTPUT POWER

XMit 2017.12.13

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TEST EQUIPMENT

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Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	20-Apr-17	20-Apr-18
Attenuator	Fairview Microwave	SA4014-20	TKV	9-Mar-17	9-Mar-18
Attenuator	S.M. Electronics	SA18H-10	REJ	10-Aug-17	10-Aug-18
Block - DC	Fairview Microwave	SD3379	AMU	20-Apr-17	20-Apr-18
Generator - Signal	Agilent	N5183A	TIA	6-Apr-16	6-Apr-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting in a no hop mode at the data rate(s) listed in the datasheet.

The method found in ANSI C63.10:2013 Section 7.8.5 was used for a FHSS radio.

OUTPUT POWER

NweTx 2016.09.14.2 XMit 2017.12.13

EUT:	IM14			Work Order:	INMC1093
Serial Number:	FCC Test Unit 1			Date:	5-Jan-18
Customer:	Honeywell Safety and Productivity Solutions			Temperature:	23 °C
Attendees:	Sean MacKellar			Humidity:	36% RH
Project:	None			Barometric Pres.:	1018 mbar
Tested by:	Richard Mellroth	Power:	12 VDC	Job Site:	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Transmitting at Default Power Setting = 29 dBm. Comparing output power at all 4 ports, remaining antenna port direct connect tests to be run on port with highest measured output power.

DEVIATIONS FROM TEST STANDARD

None

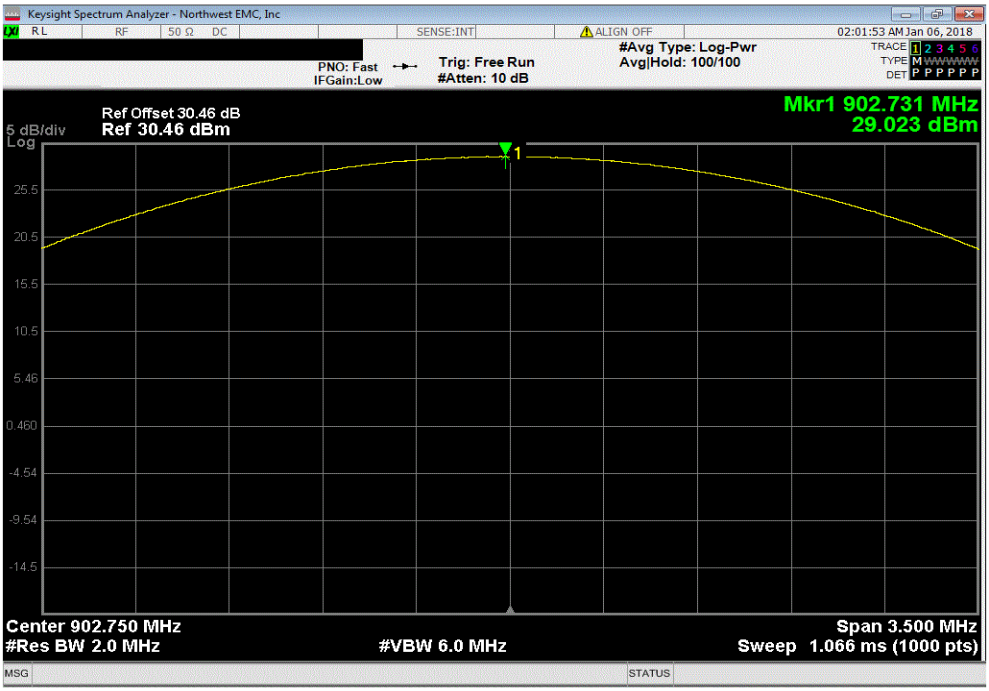
Configuration #	1	Signature

		Value	Limit (≤)	Result
PRASK Modulation				
	Antenna Port 1			
	Low Channel 5, 902.75 MHz	29.023 dBm	30 dBm	Pass
	Mid Channel 30, 915.25 MHz	28.673 dBm	30 dBm	Pass
	High Channel 54, 927.25 MHz	28.943 dBm	30 dBm	Pass
	Antenna Port 2			
	Low Channel 5, 902.75 MHz	29.002 dBm	30 dBm	Pass
	Mid Channel 30, 915.25 MHz	28.650 dBm	30 dBm	Pass
	High Channel 54, 927.25 MHz	28.864 dBm	30 dBm	Pass
	Antenna Port 3			
	Low Channel 5, 902.75 MHz	29.034 dBm	30 dBm	Pass
	Mid Channel 30, 915.25 MHz	28.661 dBm	30 dBm	Pass
	High Channel 54, 927.25 MHz	28.879 dBm	30 dBm	Pass
	Antenna Port 4			
	Low Channel 5, 902.75 MHz	29.093 dBm	30 dBm	Pass
	Mid Channel 30, 915.25 MHz	28.747 dBm	30 dBm	Pass
	High Channel 54, 927.25 MHz	29.012 dBm	30 dBm	Pass

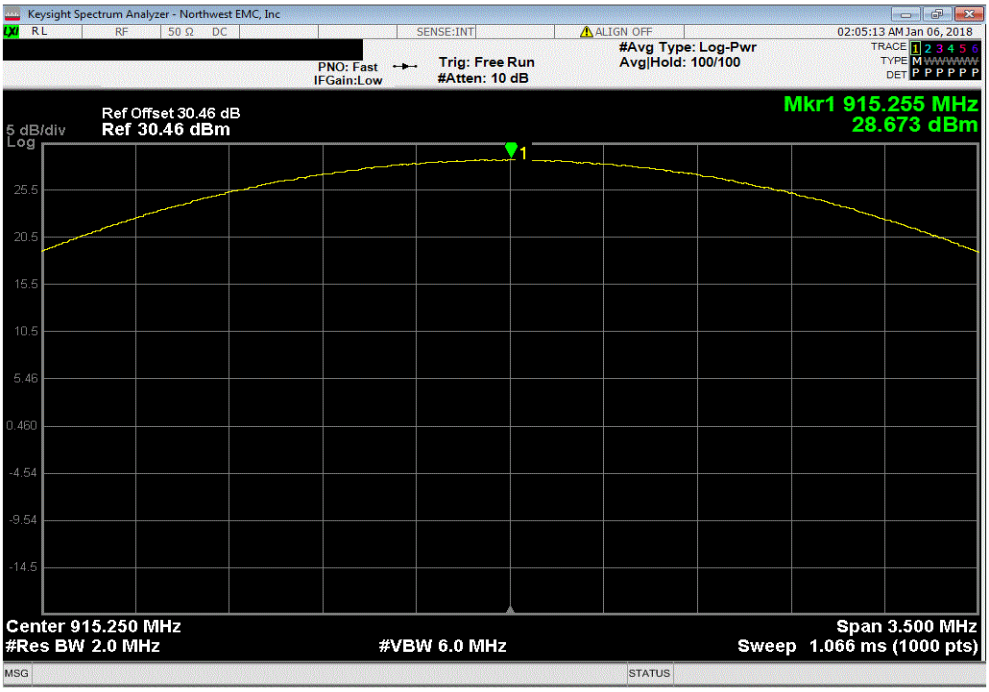
OUTPUT POWER

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 1, Low Channel 5, 902.75 MHz						
				Value	Limit (≤)	Result
				29.023 dBm	30 dBm	Pass



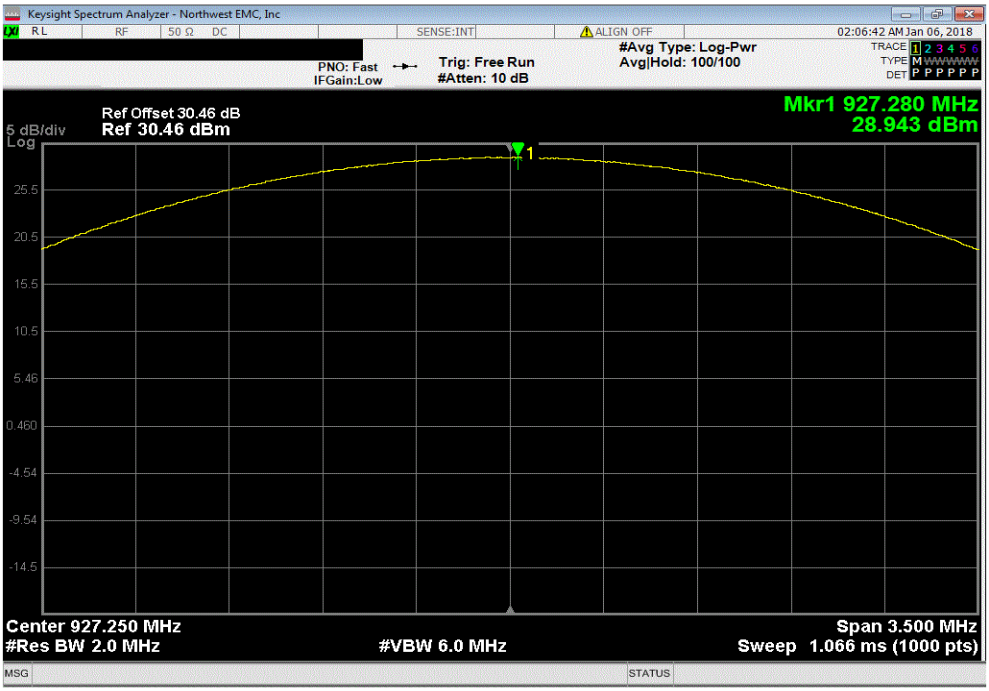
PRASK Modulation, Antenna Port 1, Mid Channel 30, 915.25 MHz						
				Value	Limit (≤)	Result
				28.673 dBm	30 dBm	Pass



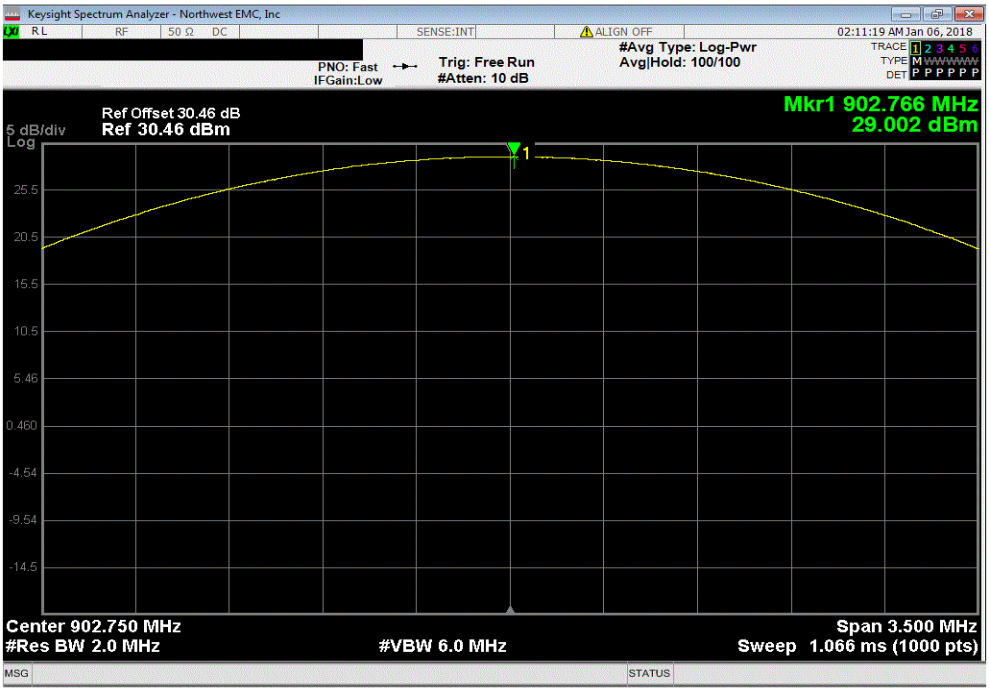
OUTPUT POWER

NweTx 2016.09.14.2 XMit 2017.12.13

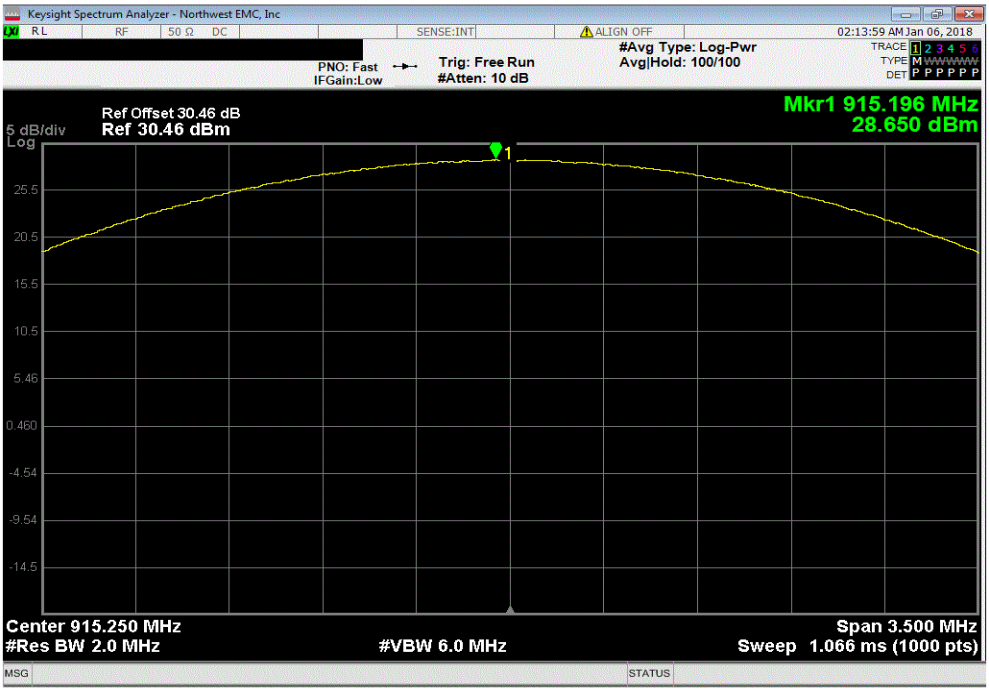
PRASK Modulation, Antenna Port 1, High Channel 54, 927.25 MHz						
				Value	Limit (≤)	Result
				28.943 dBm	30 dBm	Pass



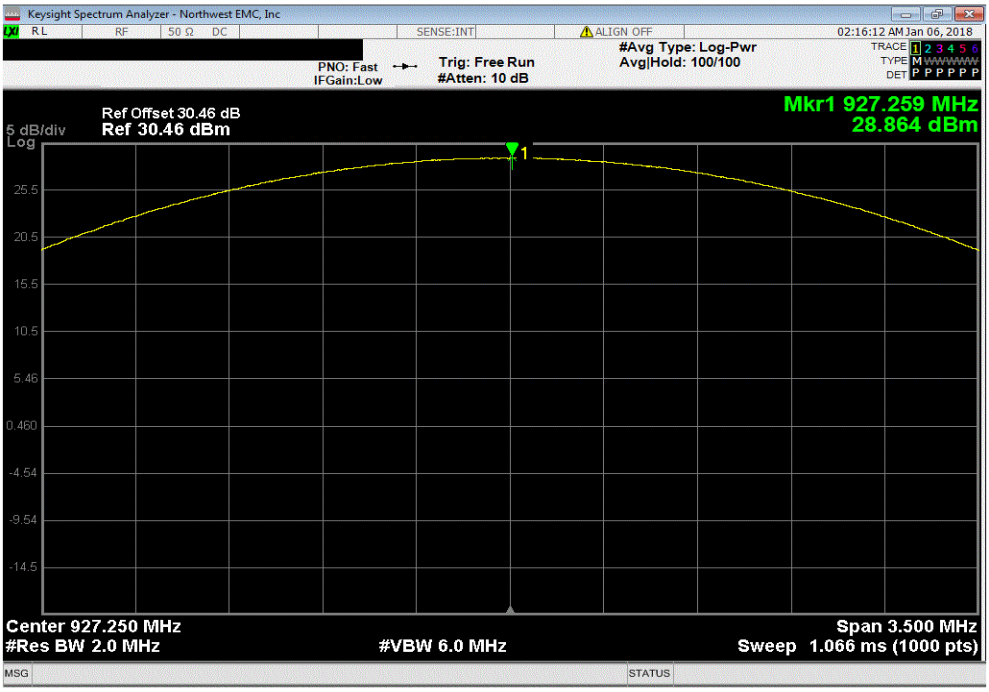
PRASK Modulation, Antenna Port 2, Low Channel 5, 902.75 MHz						
				Value	Limit (≤)	Result
				29.002 dBm	30 dBm	Pass



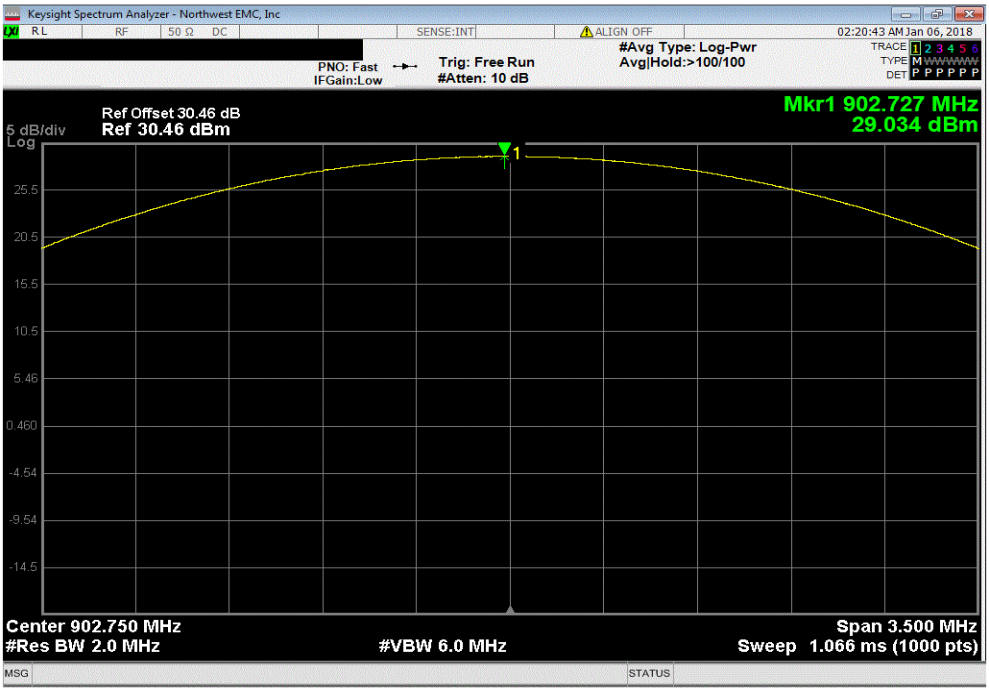
PRASK Modulation, Antenna Port 2, Mid Channel 30, 915.25 MHz						
				Value	Limit (≤)	Result
				28.650 dBm	30 dBm	Pass



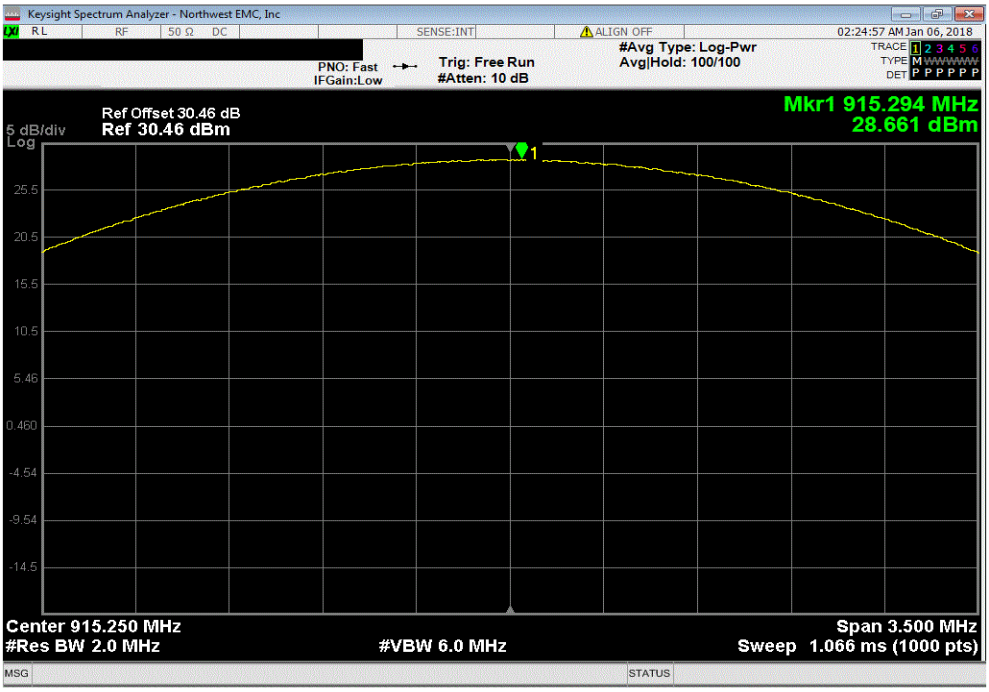
PRASK Modulation, Antenna Port 2, High Channel 54, 927.25 MHz						
				Value	Limit (≤)	Result
				28.864 dBm	30 dBm	Pass



PRASK Modulation, Antenna Port 3, Low Channel 5, 902.75 MHz						
				Value	Limit (≤)	Result
				29.034 dBm	30 dBm	Pass



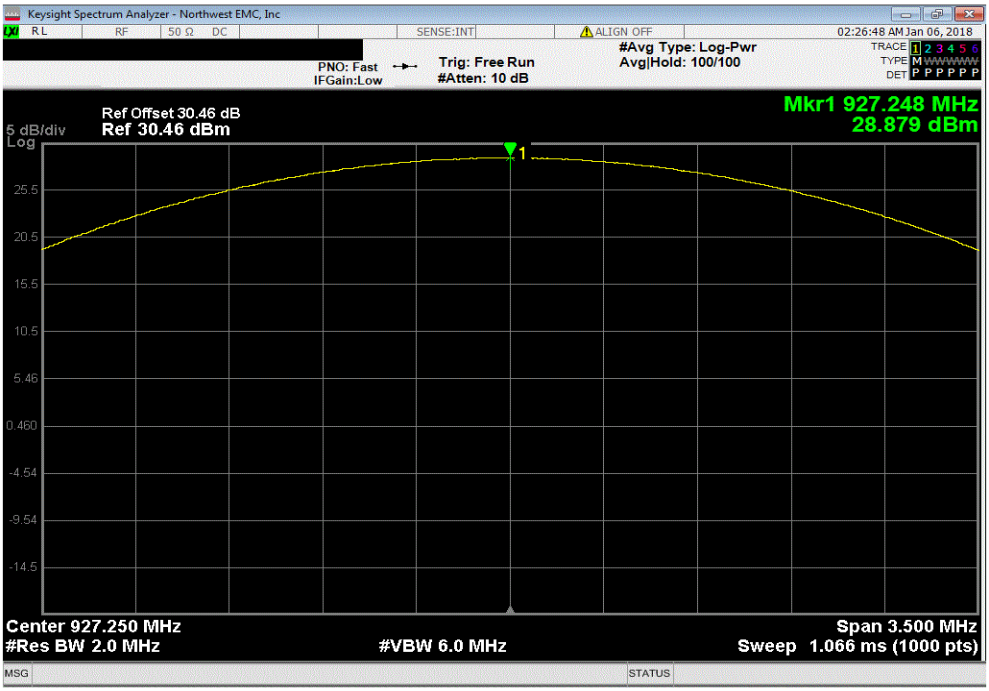
PRASK Modulation, Antenna Port 3, Mid Channel 30, 915.25 MHz						
				Value	Limit (≤)	Result
				28.661 dBm	30 dBm	Pass



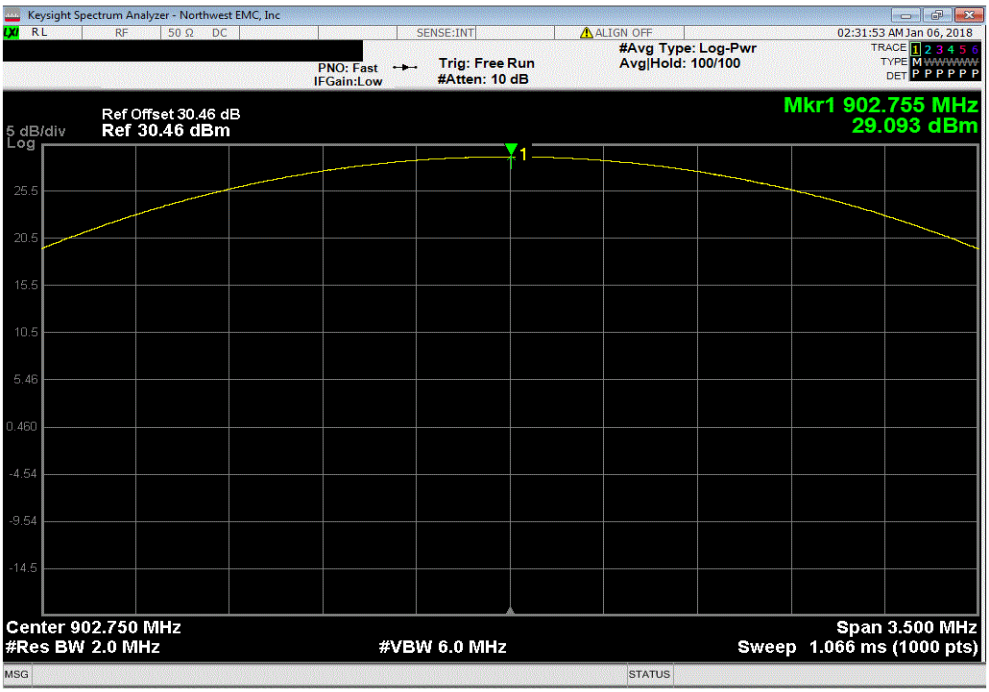
OUTPUT POWER

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 3, High Channel 54, 927.25 MHz						
				Value	Limit (≤)	Result
				28.879 dBm	30 dBm	Pass



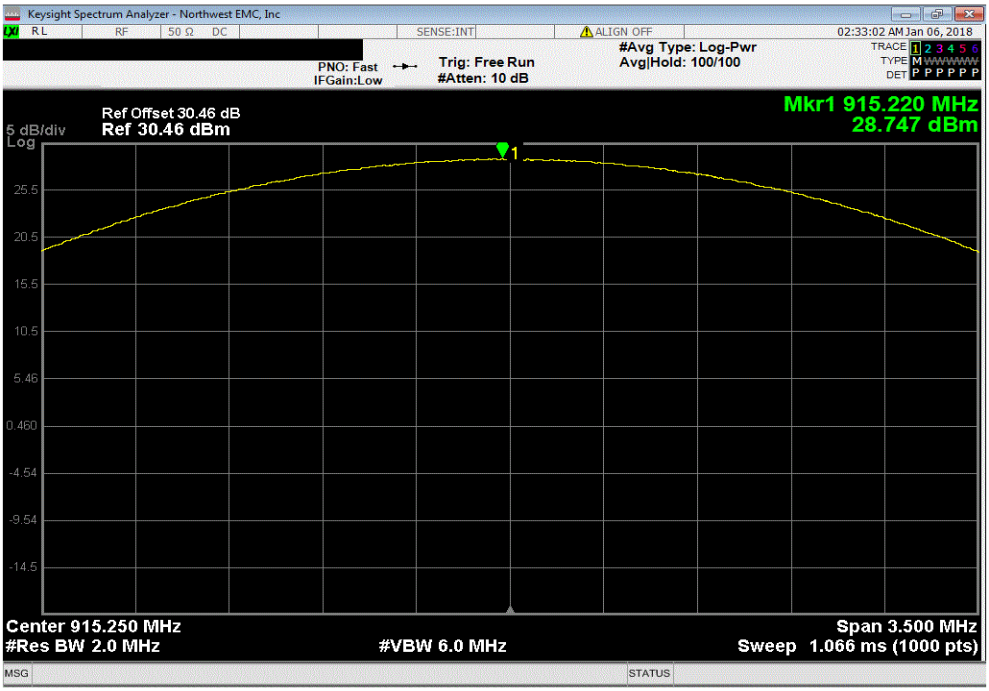
PRASK Modulation, Antenna Port 4, Low Channel 5, 902.75 MHz						
				Value	Limit (≤)	Result
				29.093 dBm	30 dBm	Pass



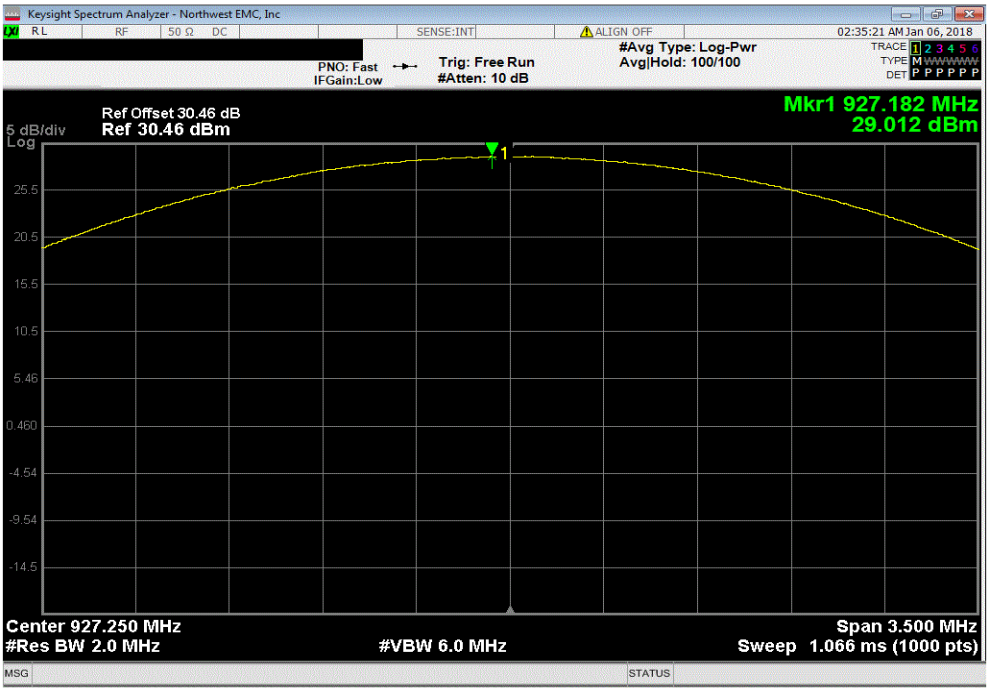
OUTPUT POWER

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Mid Channel 30, 915.25 MHz						
				Value	Limit (≤)	Result
				28.747 dBm	30 dBm	Pass



PRASK Modulation, Antenna Port 4, High Channel 54, 927.25 MHz						
				Value	Limit (≤)	Result
				29.012 dBm	30 dBm	Pass



OUTPUT POWER (High Gain Antenna Settings)

XMit 2017.12.13

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-17	19-May-18
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	20-Apr-17	20-Apr-18
Attenuator	S.M. Electronics	SA18H-10	REJ	10-Aug-17	10-Aug-18
Attenuator	Fairview Microwave	SA4014-20	TKV	9-Mar-17	9-Mar-18
Block - DC	Fairview Microwave	SD3379	AMU	20-Apr-17	20-Apr-18
Generator - Signal	Agilent	N5183A	TIA	6-Apr-16	6-Apr-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting in a no hop mode at the data rate(s) listed in the datasheet.

The method found in ANSI C63.10:2013 Section 7.8.5 was used for a FHSS radio.

OUTPUT POWER (High Gain Antenna Settings)

NweTx 2016.09.14.2 XMit 2017.12.13

EUT:	IM14			Work Order:	INMC1093
Serial Number:	FCC Test Unit 1			Date:	9-Feb-18
Customer:	Honeywell Safety and Productivity Solutions			Temperature:	23.8 °C
Attendees:	Sean MacKellar			Humidity:	35.4% RH
Project:	None			Barometric Pres.:	1028 mbar
Tested by:	Richard Mellroth	Power:	12 VDC	Job Site:	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Power Setting configured for use with 12.5 dBi Antenna (System Gain = 12.5 dBi Antenna Gain - 2.4 dB Cable Loss = 10.1 dBi), FS = 26 dBm.

DEVIATIONS FROM TEST STANDARD

None

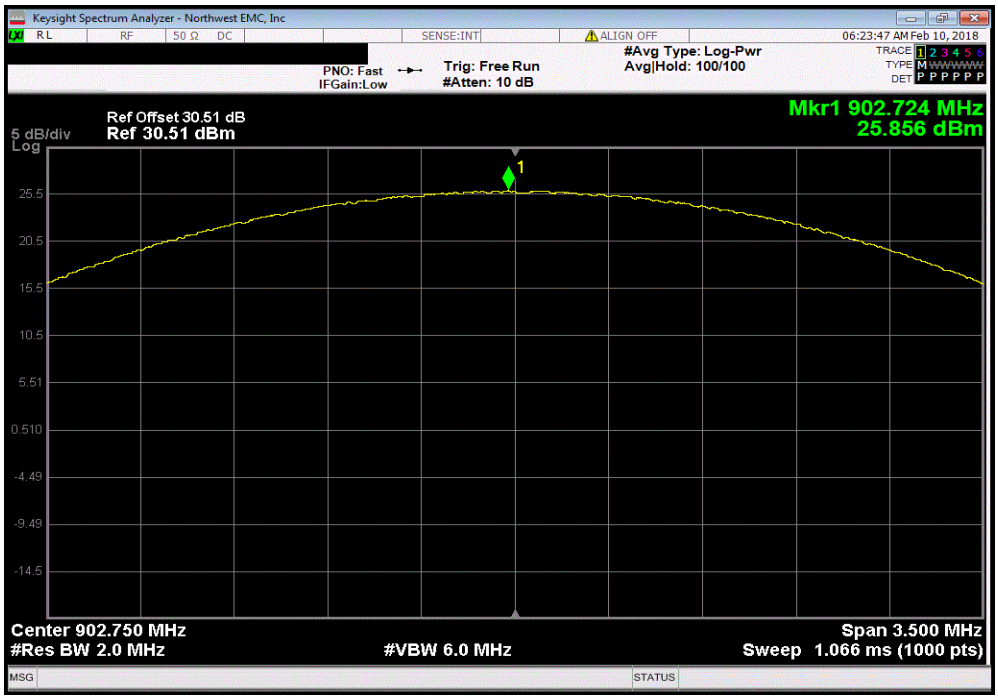
Configuration #	1	Signature

	Value	Limit (≤)	Result
PRASK Modulation			
Antenna Port 1			
Low Channel 5, 902.75 MHz	25.856 dBm	25.9 dBm	Pass
Mid Channel 30, 915.25 MHz	25.728 dBm	25.9 dBm	Pass
High Channel 54, 927.25 MHz	25.833 dBm	25.9 dBm	Pass
Antenna Port 2			
Low Channel 5, 902.75 MHz	25.823 dBm	25.9 dBm	Pass
Mid Channel 30, 915.25 MHz	25.687 dBm	25.9 dBm	Pass
High Channel 54, 927.25 MHz	25.750 dBm	25.9 dBm	Pass
Antenna Port 3			
Low Channel 5, 902.75 MHz	25.809 dBm	25.9 dBm	Pass
Mid Channel 30, 915.25 MHz	25.742 dBm	25.9 dBm	Pass
High Channel 54, 927.25 MHz	25.741 dBm	25.9 dBm	Pass
Antenna Port 4			
Low Channel 5, 902.75 MHz	25.876 dBm	25.9 dBm	Pass
Mid Channel 30, 915.25 MHz	25.726 dBm	25.9 dBm	Pass
High Channel 54, 927.25 MHz	25.852 dBm	25.9 dBm	Pass

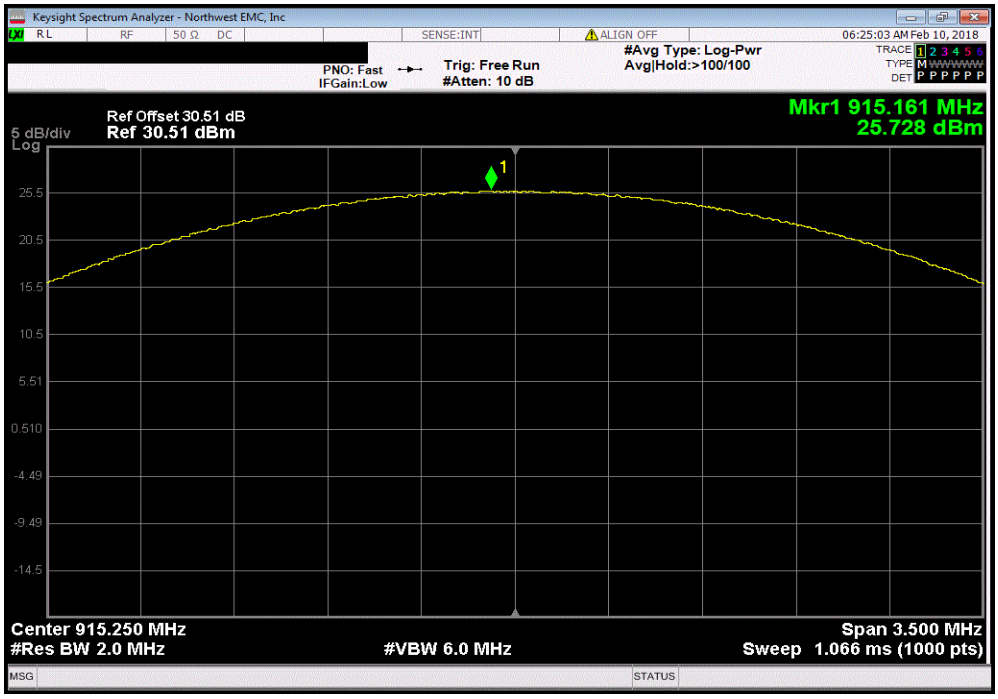
OUTPUT POWER (High Gain Antenna Settings)

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 1, Low Channel 5, 902.75 MHz						
				Value	Limit (≤)	Result
				25.856 dBm	25.9 dBm	Pass



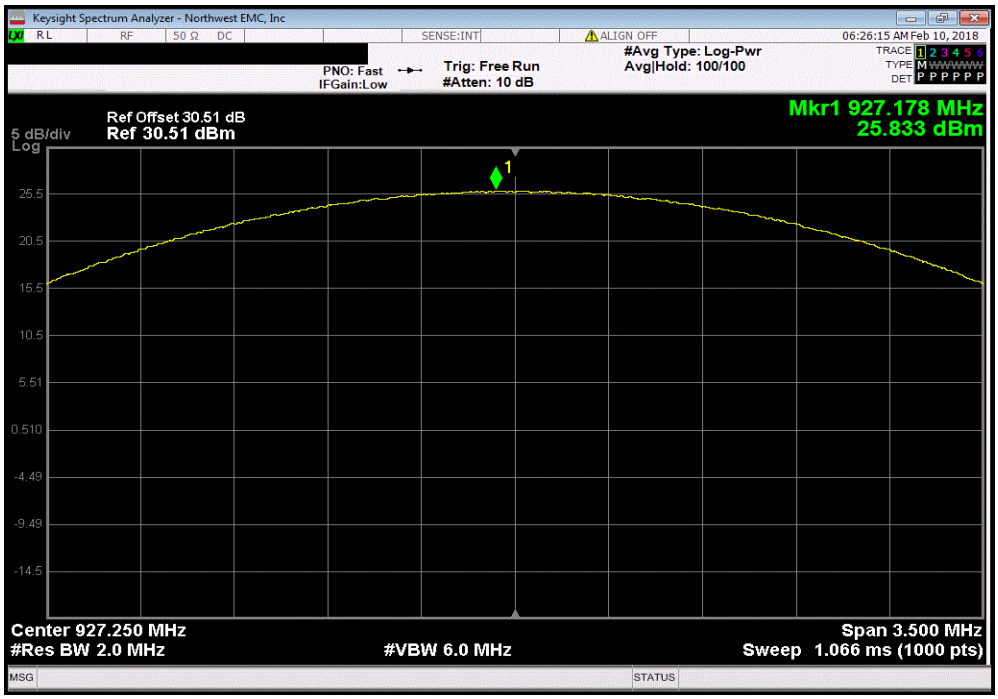
PRASK Modulation, Antenna Port 1, Mid Channel 30, 915.25 MHz						
				Value	Limit (≤)	Result
				25.728 dBm	25.9 dBm	Pass



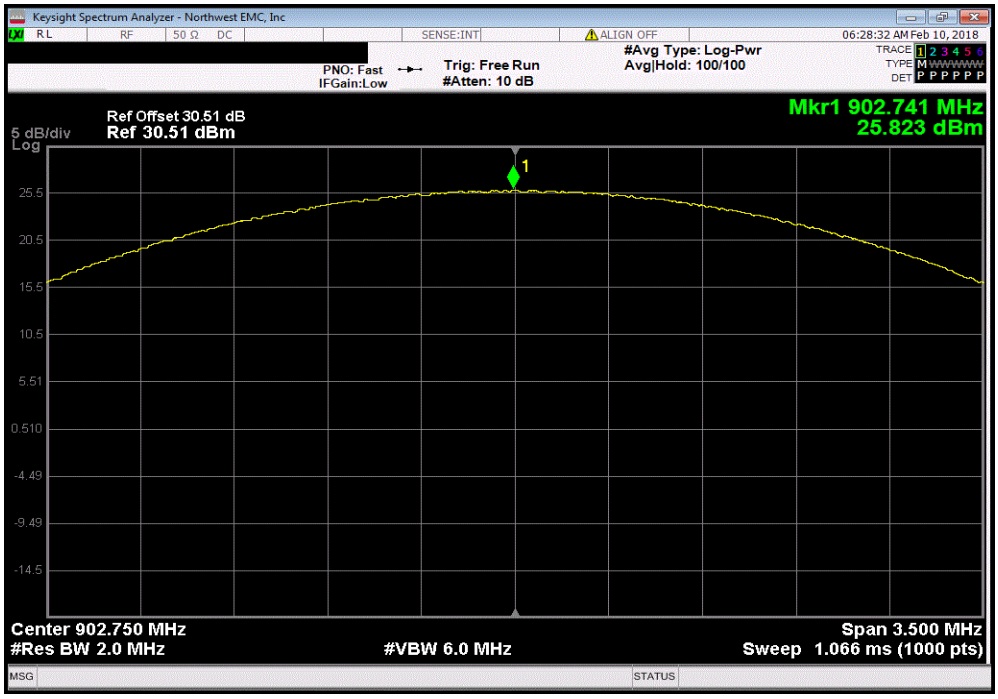
OUTPUT POWER (High Gain Antenna Settings)

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 1, High Channel 54, 927.25 MHz						
				Value	Limit (≤)	Result
				25.833 dBm	25.9 dBm	Pass



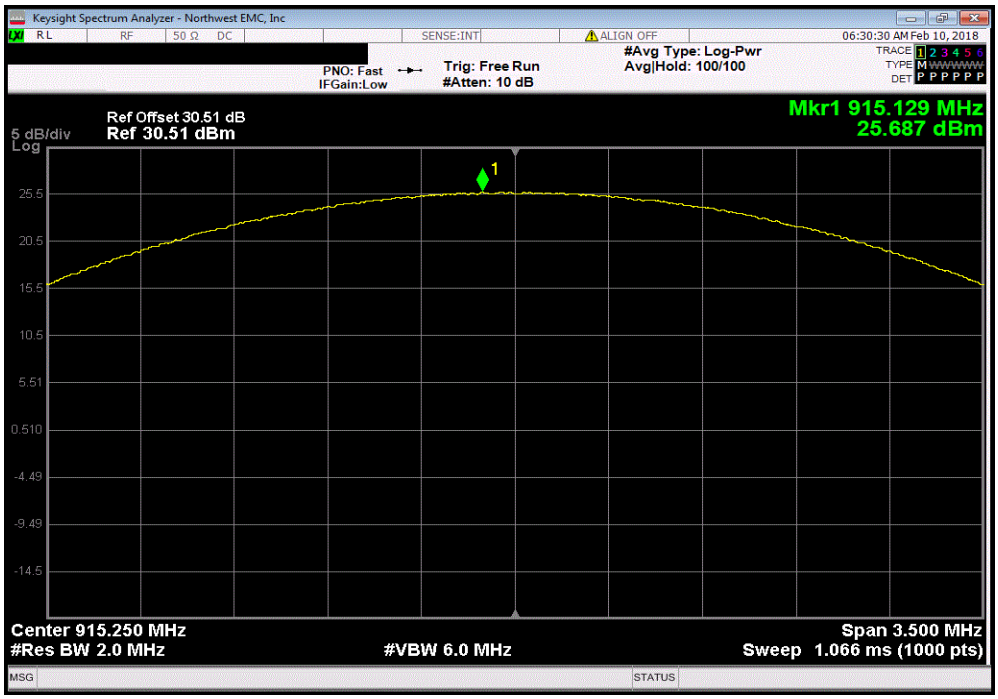
PRASK Modulation, Antenna Port 2, Low Channel 5, 902.75 MHz						
				Value	Limit (≤)	Result
				25.823 dBm	25.9 dBm	Pass



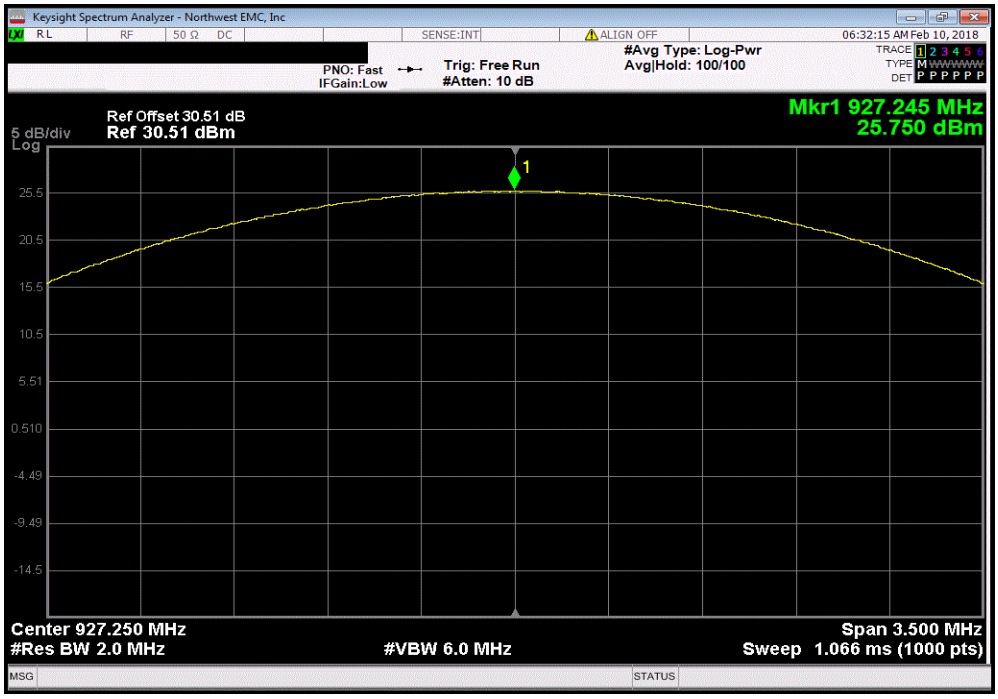
OUTPUT POWER (High Gain Antenna Settings)

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 2, Mid Channel 30, 915.25 MHz						
				Value	Limit (≤)	Result
				25.687 dBm	25.9 dBm	Pass



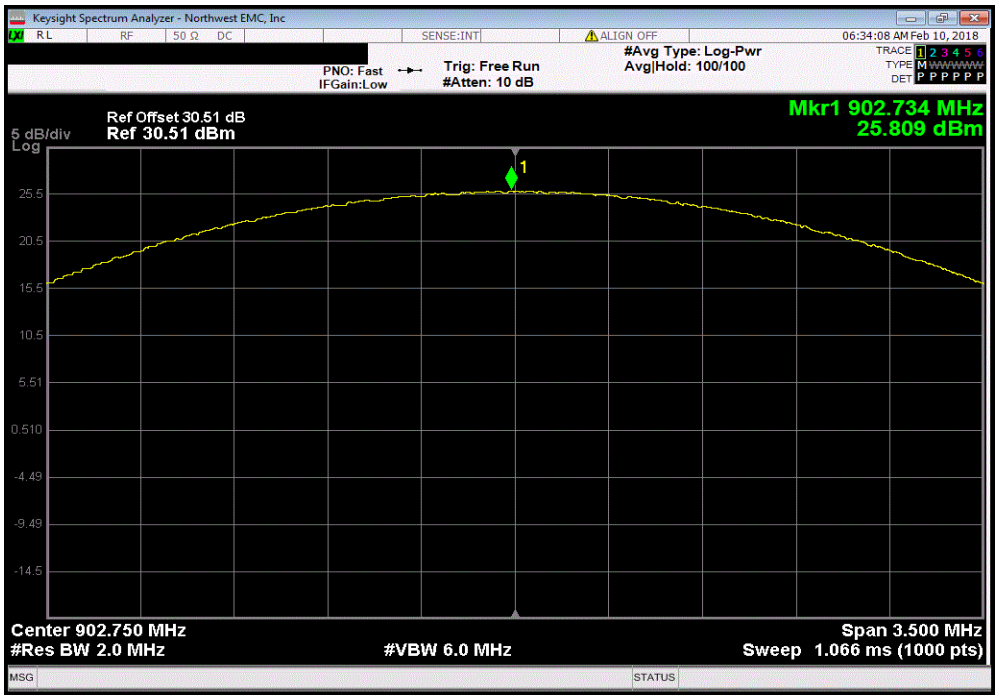
PRASK Modulation, Antenna Port 2, High Channel 54, 927.25 MHz						
				Value	Limit (≤)	Result
				25.750 dBm	25.9 dBm	Pass



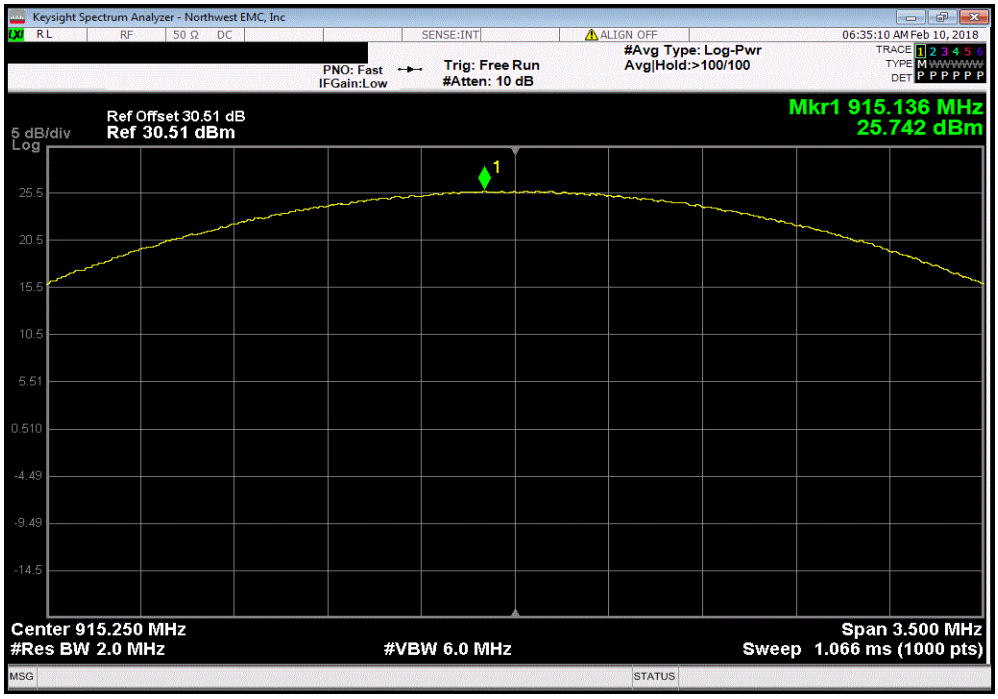
OUTPUT POWER (High Gain Antenna Settings)

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 3, Low Channel 5, 902.75 MHz						
				Value	Limit (≤)	Result
				25.809 dBm	25.9 dBm	Pass



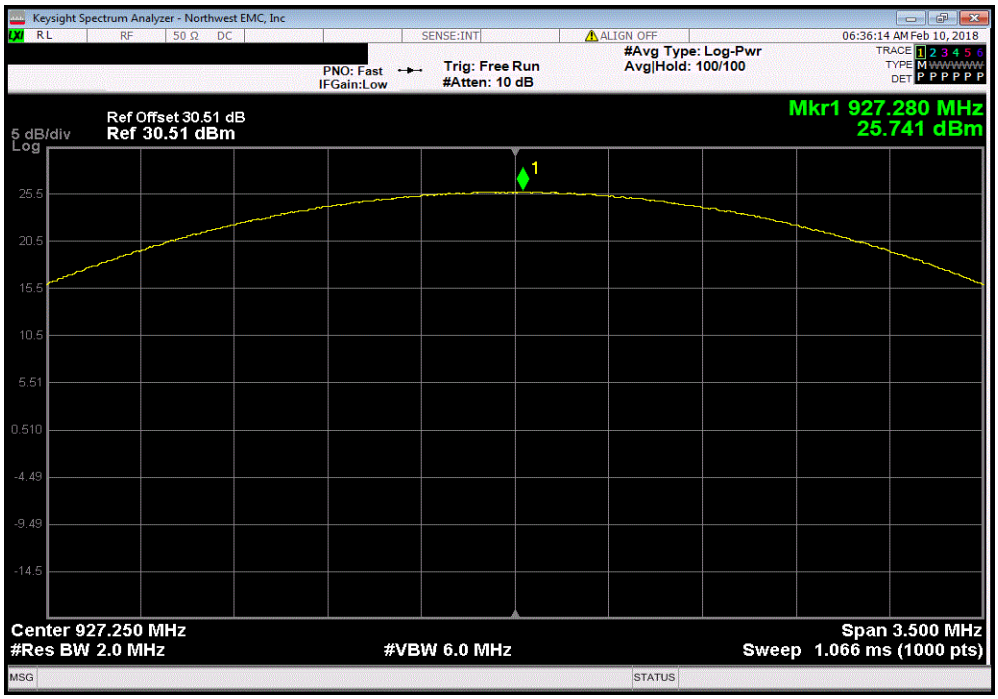
PRASK Modulation, Antenna Port 3, Mid Channel 30, 915.25 MHz						
				Value	Limit (≤)	Result
				25.742 dBm	25.9 dBm	Pass



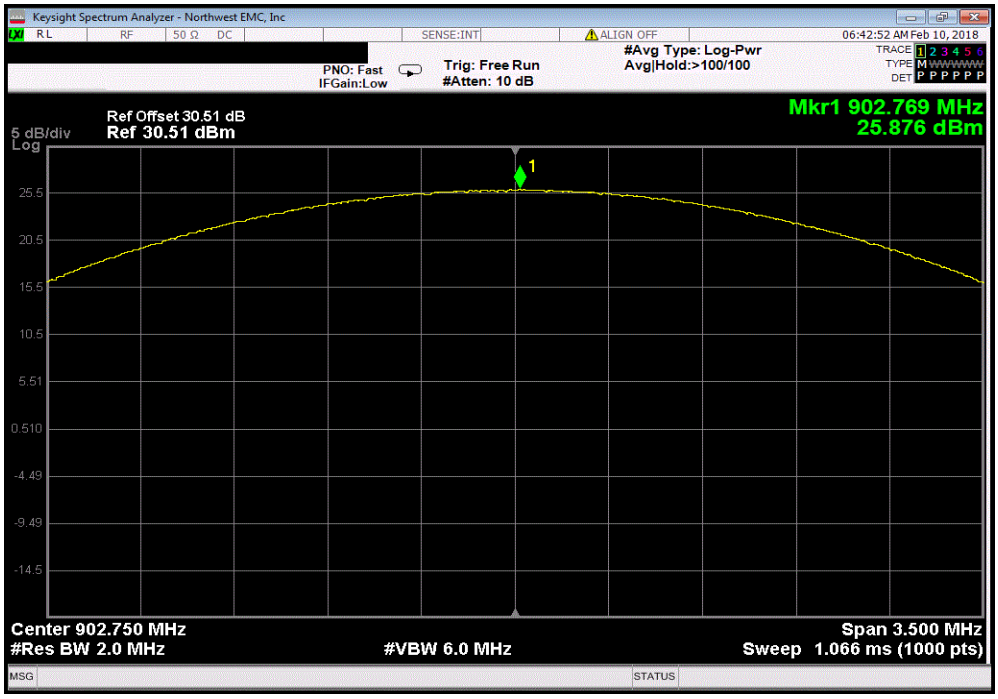
OUTPUT POWER (High Gain Antenna Settings)

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 3, High Channel 54, 927.25 MHz						
				Value	Limit (≤)	Result
				25.741 dBm	25.9 dBm	Pass



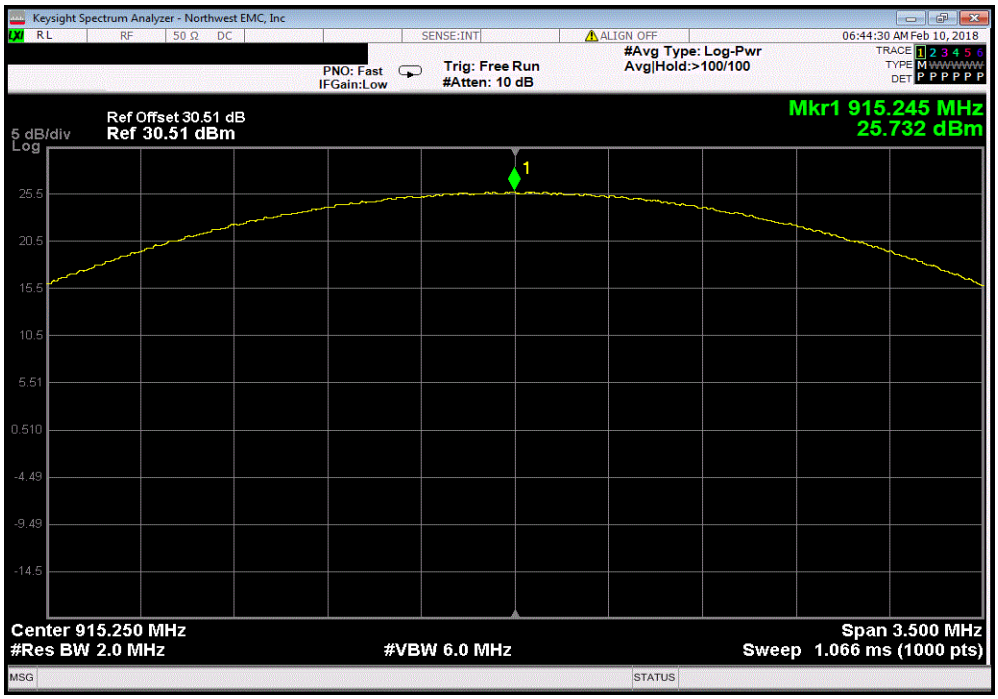
PRASK Modulation, Antenna Port 4, Low Channel 5, 902.75 MHz						
				Value	Limit (≤)	Result
				25.876 dBm	25.9 dBm	Pass



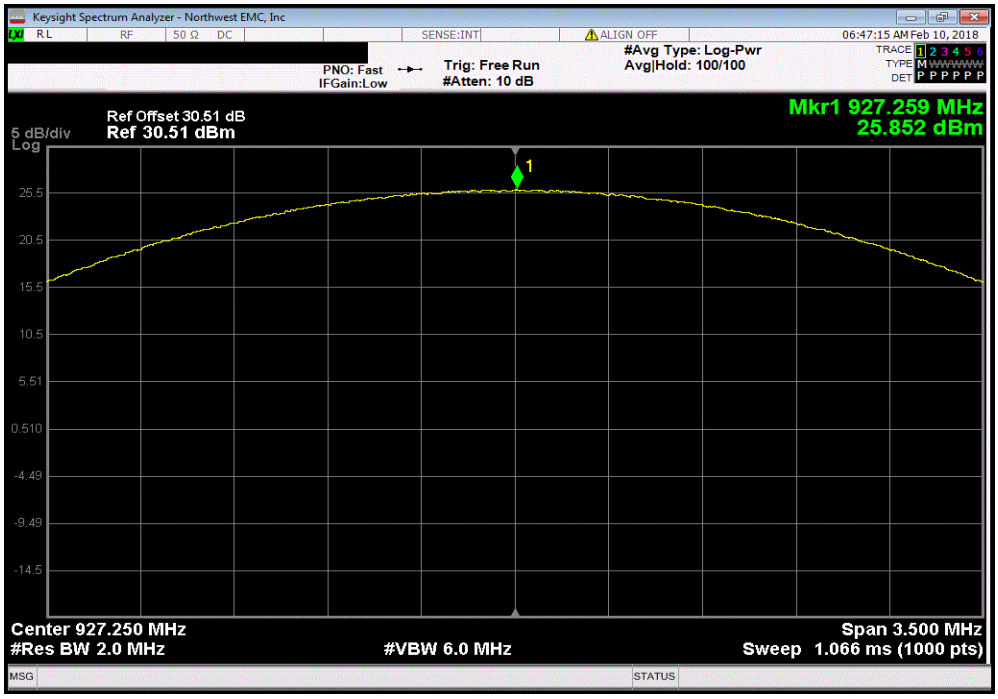
OUTPUT POWER (High Gain Antenna Settings)

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Mid Channel 30, 915.25 MHz						
				Value	Limit (≤)	Result
				25.726 dBm	25.9 dBm	Pass



PRASK Modulation, Antenna Port 4, High Channel 54, 927.25 MHz						
				Value	Limit (≤)	Result
				25.852 dBm	25.9 dBm	Pass



BAND EDGE COMPLIANCE

XMit 2017.12.13

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-17	19-May-18
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	20-Apr-17	20-Apr-18
Attenuator	Fairview Microwave	SA4014-20	TKV	9-Mar-17	9-Mar-18
Attenuator	S.M. Electronics	SA18H-10	REJ	10-Aug-17	10-Aug-18
Block - DC	Fairview Microwave	SD3379	AMU	20-Apr-17	20-Apr-18
Generator - Signal	Agilent	N5183A	TIA	6-Apr-16	6-Apr-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to low and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet in a no hop mode. The channels closest to the band edges were selected.

The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE

NweTx 2016.09.14.2 XMit 2017.12.13

EUT:	IM14			Work Order:	INMC1093
Serial Number:	FCC Test Unit 1			Date:	5-Jan-18
Customer:	Honeywell Safety and Productivity Solutions			Temperature:	23 °C
Attendees:	Sean MacKellar			Humidity:	36% RH
Project:	None			Barometric Pres.:	1018 mbar
Tested by:	Richard Mellroth	Power:	12 VDC	Job Site:	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Transmitting at Default Power Setting = 29 dBm

DEVIATIONS FROM TEST STANDARD

None

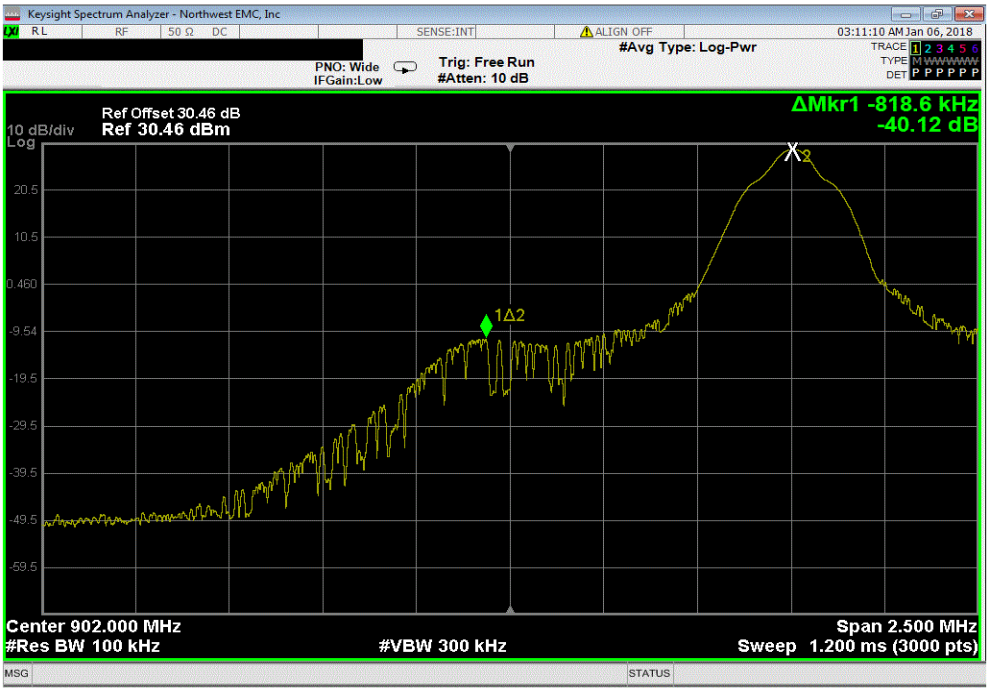
Configuration #	1	Signature

		Value (dBc)	Limit ≤ (dBc)	Result
PRASK Modulation				
	Antenna Port 4			
	Low Channel 5, 902.75 MHz	-40.12	-20	Pass
	High Channel 54, 927.25 MHz	-39.47	-20	Pass

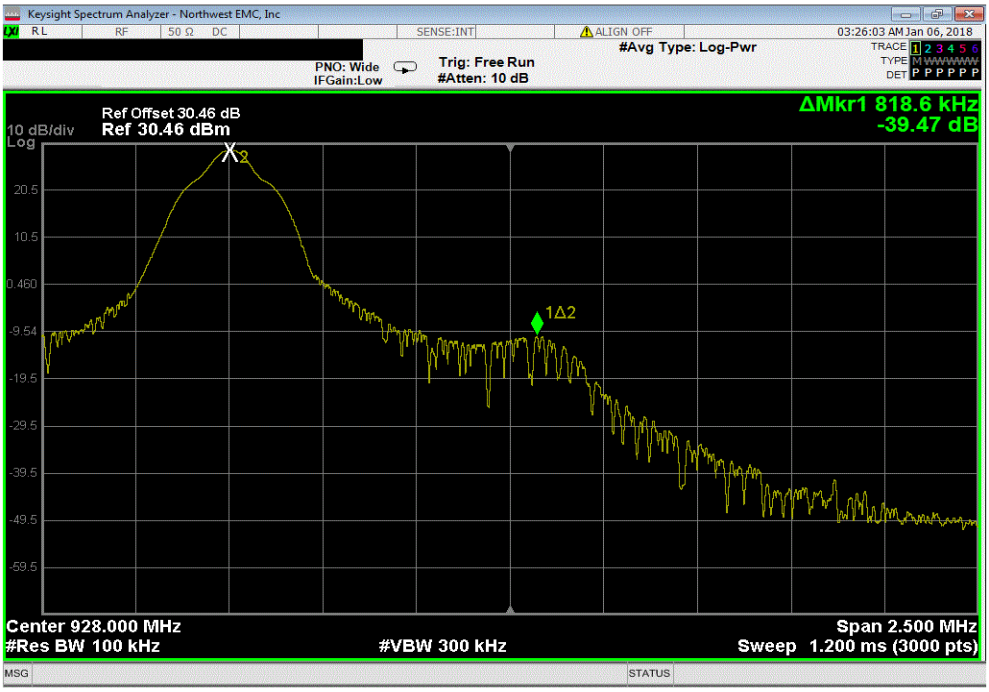
BAND EDGE COMPLIANCE

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Low Channel 5, 902.75 MHz							
					Value (dBc)	Limit ≤ (dBc)	Result
					-40.12	-20	Pass



PRASK Modulation, Antenna Port 4, High Channel 54, 927.25 MHz							
					Value (dBc)	Limit ≤ (dBc)	Result
					-39.47	-20	Pass



BAND EDGE COMPLIANCE -HOPPING MODE

XMit 2017.12.13

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-17	19-May-18
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	20-Apr-17	20-Apr-18
Attenuator	Fairview Microwave	SA4014-20	TKV	9-Mar-17	9-Mar-18
Attenuator	S.M. Electronics	SA18H-10	REJ	10-Aug-17	10-Aug-18
Block - DC	Fairview Microwave	SD3379	AMU	20-Apr-17	20-Apr-18
Generator - Signal	Agilent	N5183A	TIA	6-Apr-16	6-Apr-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to its normal pseudo-random hopping sequence. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE -HOPPING MODE

NweTx 2016.09.14.2 XMit 2017.12.13

EUT:	IM14			**Work Order:**	INMC1093
Serial Number:	FCC Test Unit 1			**Date:**	5-Jan-18
Customer:	Honeywell Safety and Productivity Solutions			**Temperature:**	23 °C
Attendees:	Sean MacKellar			**Humidity:**	36% RH
Project:	None			**Barometric Pres.:**	1018 mbar
Tested by:	Richard Mellroth	**Power:**	12 VDC	**Job Site:**	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Transmitting at Default Power Setting = 29 dBm

DEVIATIONS FROM TEST STANDARD

None

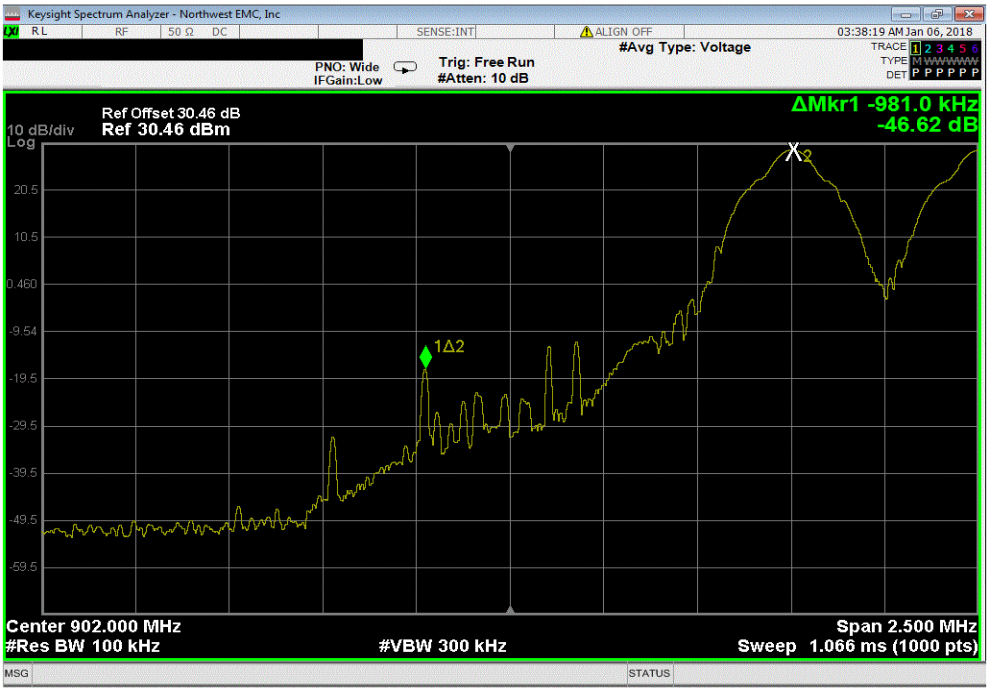
Configuration #	1	Signature

		Value (dBc)	Limit ≤ (dBc)	Result
PRASK Modulation				
	Antenna Port 4			
	Hopping Mode, 902 MHz Band Edge	-46.62	-20	Pass
	Hopping Mode, 928 MHz Band Edge	-39.73	-20	Pass

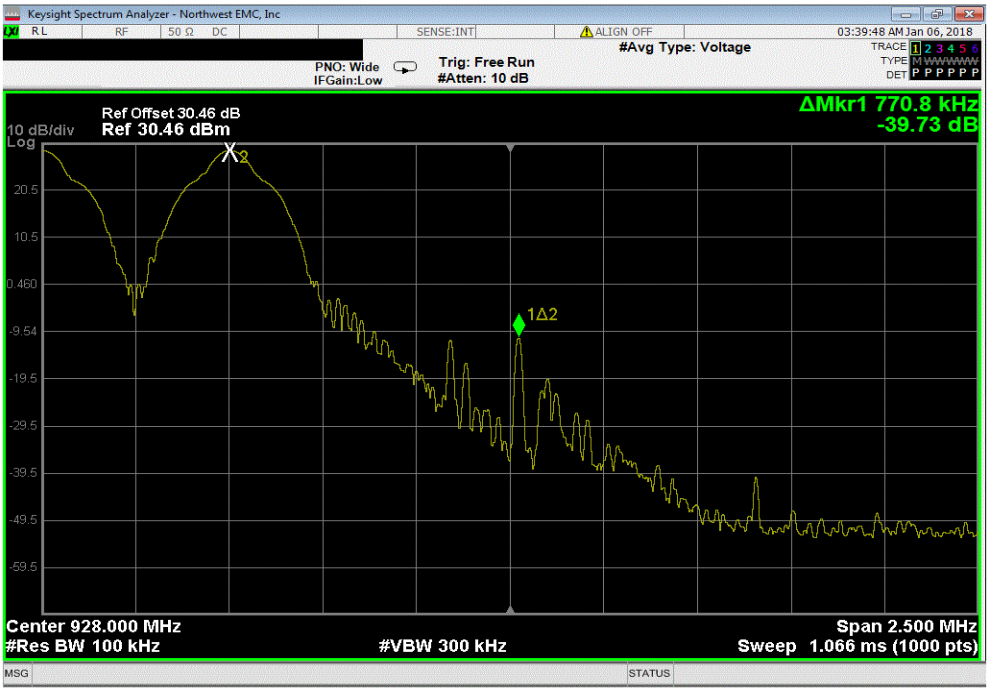
BAND EDGE COMPLIANCE -HOPPING MODE

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Hopping Mode, 902 MHz Band Edge						
				Value (dBc)	Limit ≤ (dBc)	Result
				-46.62	-20	Pass



PRASK Modulation, Antenna Port 4, Hopping Mode, 928 MHz Band Edge						
				Value (dBc)	Limit ≤ (dBc)	Result
				-39.73	-20	Pass



OCCUPIED BANDWIDTH

XMit 2017.12.13

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-17	19-May-18
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	20-Apr-17	20-Apr-18
Attenuator	Fairview Microwave	SA4014-20	TKV	9-Mar-17	9-Mar-18
Attenuator	S.M. Electronics	SA18H-10	REJ	10-Aug-17	10-Aug-18
Block - DC	Fairview Microwave	SD3379	AMU	20-Apr-17	20-Apr-18
Generator - Signal	Agilent	N5183A	TIA	6-Apr-16	6-Apr-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The 20 dB occupied bandwidth was measured with the EUT set to low, medium and high transmit frequencies in the band. The EUT was transmitting at the data rate(s) listed in the datasheet in a no-hop mode.

OCCUPIED BANDWIDTH

NweTx 2016.09.14.2 XMit 2017.12.13

EUT:	IM14			Work Order:	INMC1093
Serial Number:	FCC Test Unit 1			Date:	5-Jan-18
Customer:	Honeywell Safety and Productivity Solutions			Temperature:	23 °C
Attendees:	Sean MacKellar			Humidity:	36% RH
Project:	None			Barometric Pres.:	1018 mbar
Tested by:	Richard Mellroth	Power:	12 VDC	Job Site:	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Transmitting at Default Power Setting = 29 dBm

DEVIATIONS FROM TEST STANDARD

None

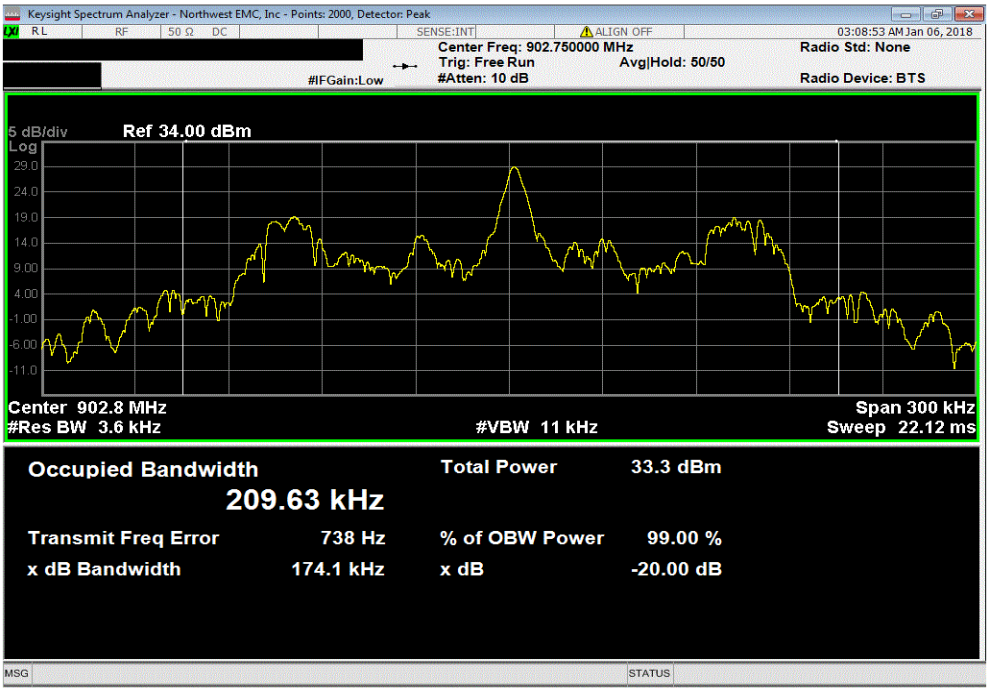
Configuration #	1	Signature

		Value	Limit (<)	Result
PRASK Modulation				
	Antenna Port 4			
	Low Channel 5, 902.75 MHz	174.1 kHz	250 kHz	Pass
	Mid Channel 30, 915.25 MHz	173.1 kHz	250 kHz	Pass
	High Channel 54, 927.25 MHz	174.7 kHz	250 kHz	Pass

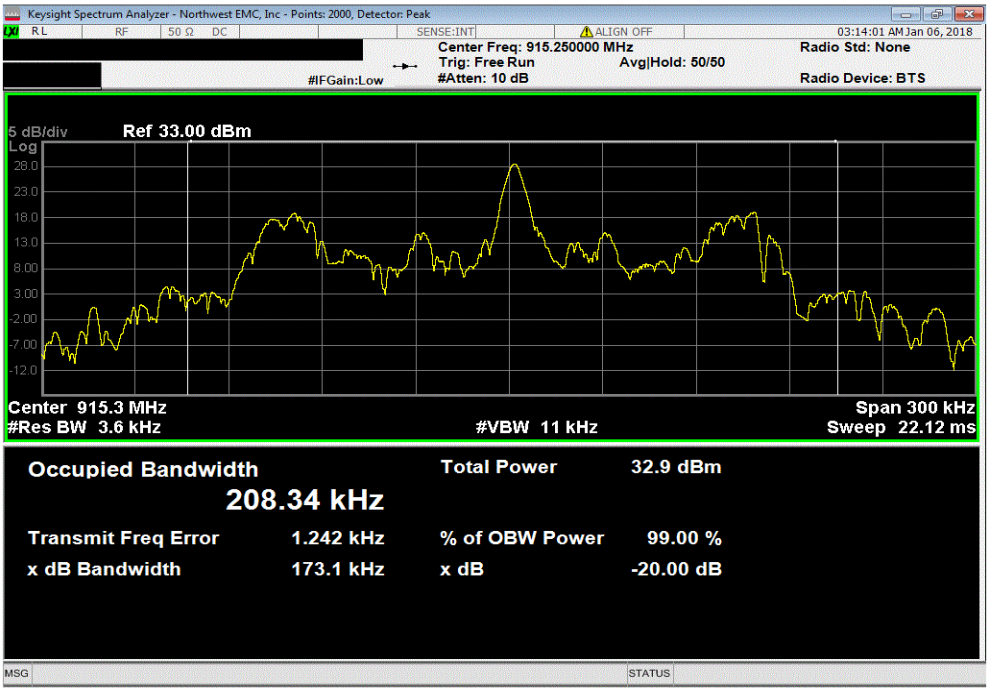
OCCUPIED BANDWIDTH

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Low Channel 5, 902.75 MHz						
				Value	Limit (<)	Result
				174.1 kHz	250 kHz	Pass



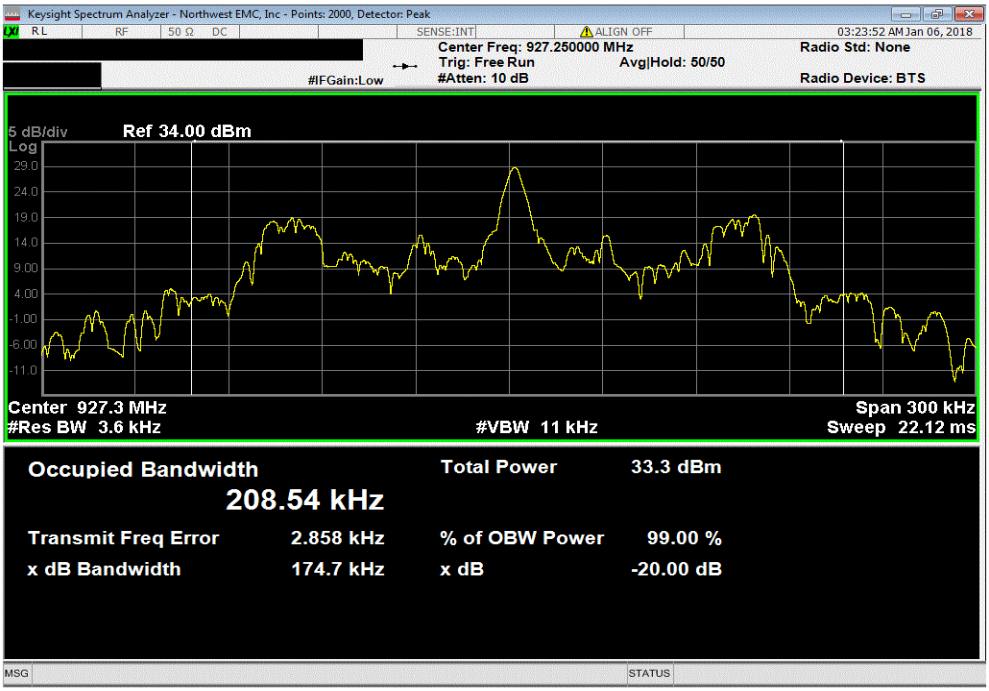
PRASK Modulation, Antenna Port 4, Mid Channel 30, 915.25 MHz						
				Value	Limit (<)	Result
				173.1 kHz	250 kHz	Pass



OCCUPIED BANDWIDTH

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, High Channel 54, 927.25 MHz						
				Value	Limit (<)	Result
				174.7 kHz	250 kHz	Pass



SPURIOUS CONDUCTED EMISSIONS

XMit 2017.12.13

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-17	19-May-18
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	20-Apr-17	20-Apr-18
Attenuator	Fairview Microwave	SA4014-20	TKV	9-Mar-17	9-Mar-18
Attenuator	S.M. Electronics	SA18H-10	REJ	10-Aug-17	10-Aug-18
Block - DC	Fairview Microwave	SD3379	AMU	20-Apr-17	20-Apr-18
Generator - Signal	Agilent	N5183A	TIA	6-Apr-16	6-Apr-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet in a no-hop mode. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS

NweTx 2016.09.14.2 XMit 2017.12.13

EUT:	IM14			Work Order:	INMC1093
Serial Number:	FCC Test Unit 1			Date:	5-Jan-18
Customer:	Honeywell Safety and Productivity Solutions			Temperature:	23 °C
Attendees:	Sean MacKellar			Humidity:	36% RH
Project:	None			Barometric Pres.:	1018 mbar
Tested by:	Richard Mellroth	Power:	12 VDC	Job Site:	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Transmitting at Default Power Setting = 29 dBm

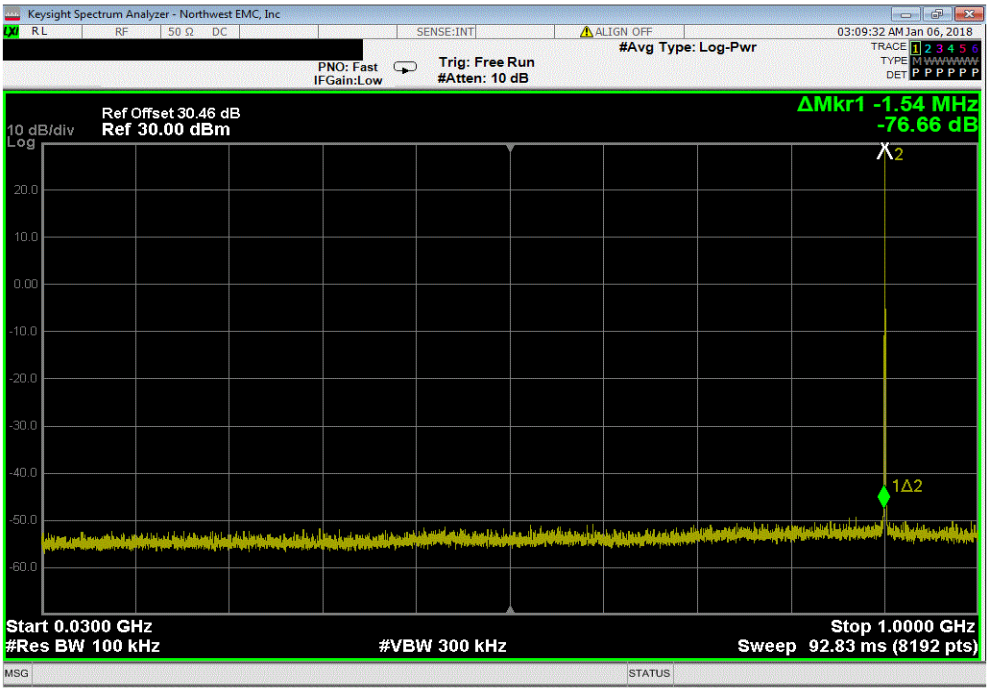
DEVIATIONS FROM TEST STANDARD

None

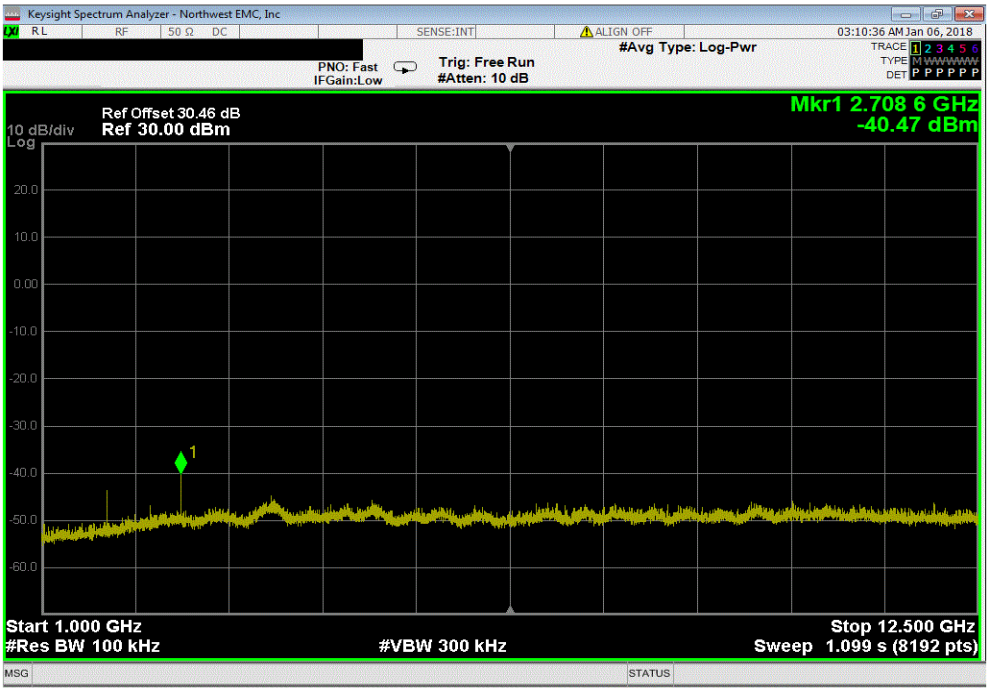
Configuration #	1	Signature

		Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result
PRASK Modulation					
	Antenna Port 4				
	Low Channel 5, 902.75 MHz	30 MHz - 1 GHz	-76.66	-20	Pass
	Low Channel 5, 902.75 MHz	1 GHz - 12.5 GHz	-69.42	-20	Pass
	Mid Channel 30, 915.25 MHz	30 MHz - 1 GHz	-78.67	-20	Pass
	Mid Channel 30, 915.25 MHz	1 GHz - 12.5 GHz	-71.26	-20	Pass
	High Channel 54, 927.25 MHz	30 MHz - 1 GHz	-76.2	-20	Pass
	High Channel 54, 927.25 MHz	1 GHz - 12.5 GHz	-70.33	-20	Pass

PRASK Modulation, Antenna Port 4, Low Channel 5, 902.75 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	30 MHz - 1 GHz		-76.66	-20	Pass



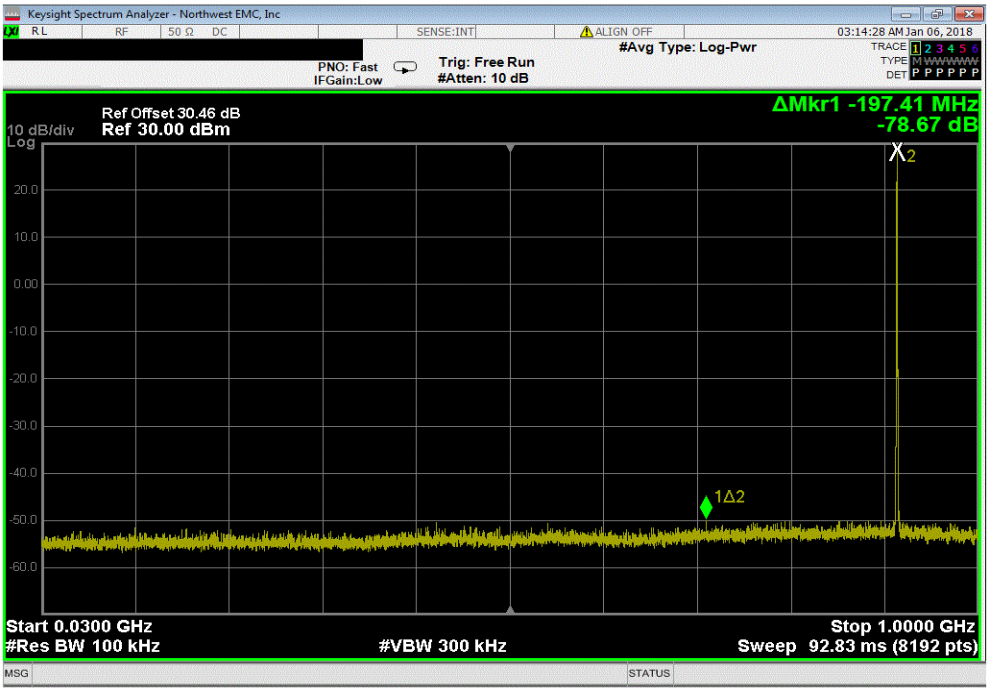
PRASK Modulation, Antenna Port 4, Low Channel 5, 902.75 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	1 GHz - 12.5 GHz		-69.42	-20	Pass



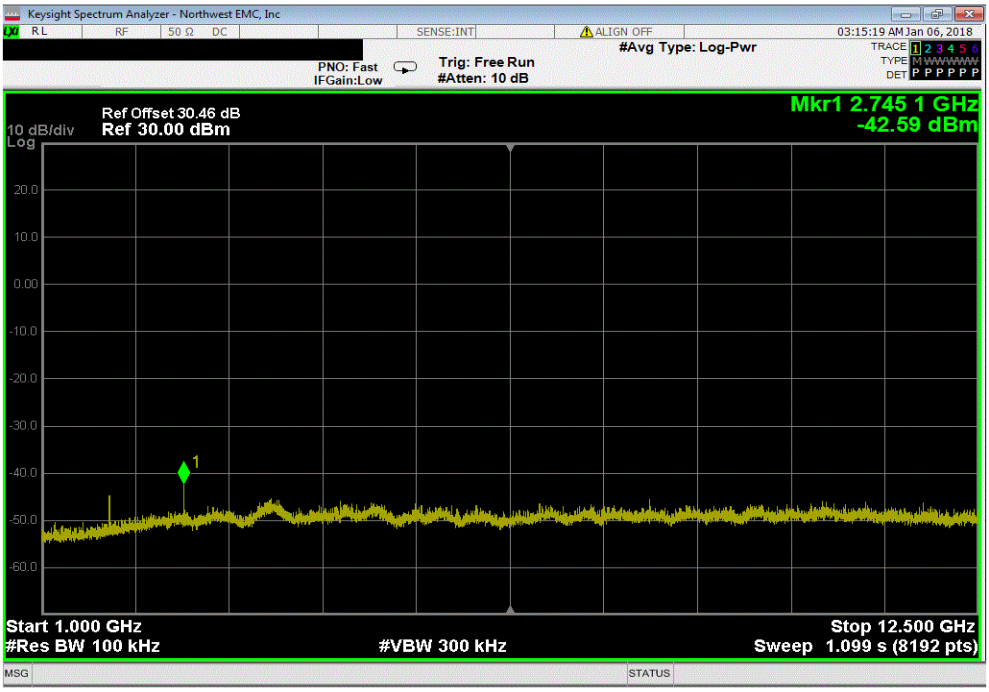
SPURIOUS CONDUCTED EMISSIONS

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Mid Channel 30, 915.25 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 1 GHz			-78.67	-20	Pass



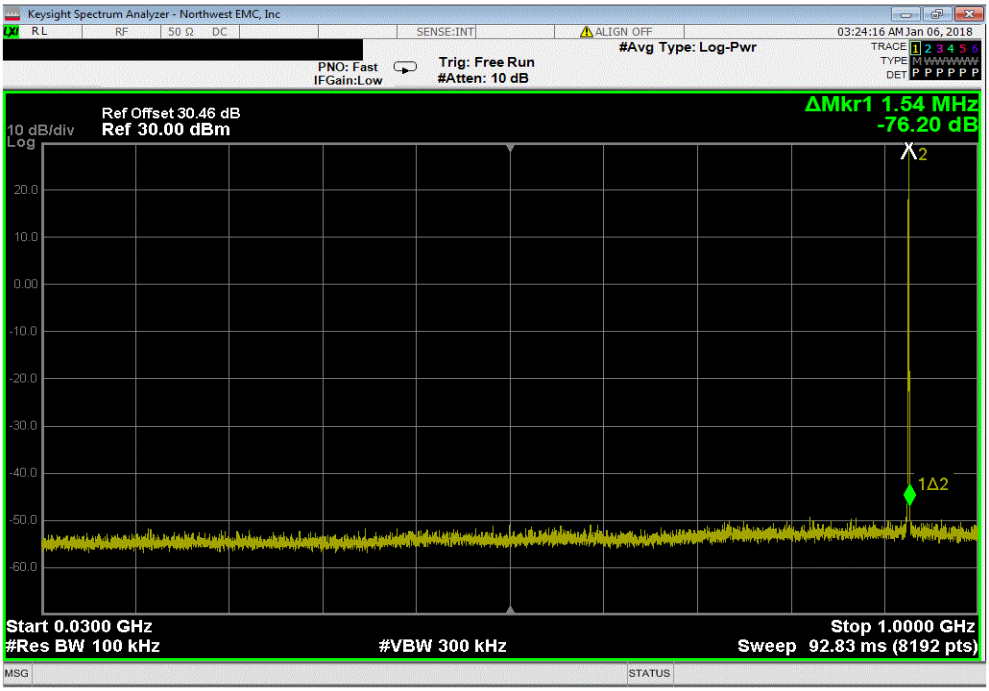
PRASK Modulation, Antenna Port 4, Mid Channel 30, 915.25 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
1 GHz - 12.5 GHz			-71.26	-20	Pass



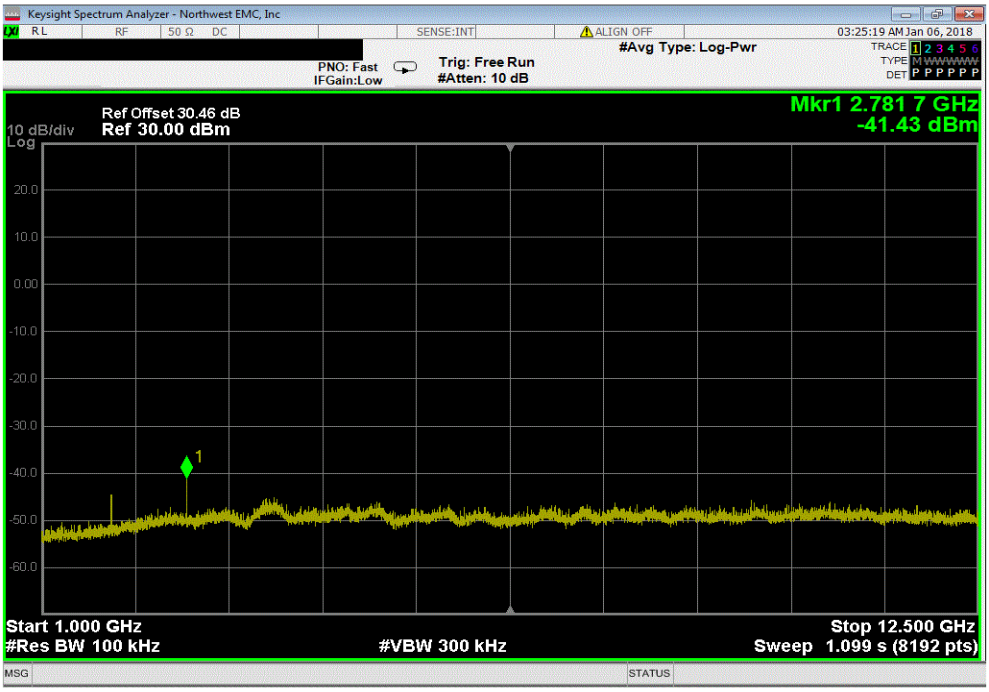
SPURIOUS CONDUCTED EMISSIONS

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, High Channel 54, 927.25 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 1 GHz			-76.2	-20	Pass



PRASK Modulation, Antenna Port 4, High Channel 54, 927.25 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
1 GHz - 12.5 GHz			-70.33	-20	Pass



SPURIOUS CONDUCTED EMISSIONS (High Gain Antenna)

XMit 2017.12.13

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	19-May-17	19-May-18
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	20-Apr-17	20-Apr-18
Attenuator	S.M. Electronics	SA18H-10	REJ	10-Aug-17	10-Aug-18
Attenuator	Fairview Microwave	SA4014-20	TKV	9-Mar-17	9-Mar-18
Block - DC	Fairview Microwave	SD3379	AMU	20-Apr-17	20-Apr-18
Generator - Signal	Agilent	N5183A	TIA	6-Apr-16	6-Apr-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet in a no-hop mode. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS (High Gain Antenna)

NweTx 2016.09.14.2 XMit 2017.12.13

EUT:	IM14			**Work Order:**	INMC1093
Serial Number:	FCC Test Unit 1			**Date:**	9-Feb-18
Customer:	Honeywell Safety and Productivity Solutions			**Temperature:**	23.3 °C
Attendees:	Sean MacKellar			**Humidity:**	36.3% RH
Project:	None			**Barometric Pres.:**	1028 mbar
Tested by:	Richard Mellroth	**Power:**	12 VDC	**Job Site:**	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Power Setting configured for use with 12.5 dBi Antenna (System Gain = 12.5 dBi Antenna Gain - 2.4 dB Cable Loss = 10.1 dBi), FS = 26 dBm. Testing performed only on Antenna Port with highest measured output power.

DEVIATIONS FROM TEST STANDARD

None

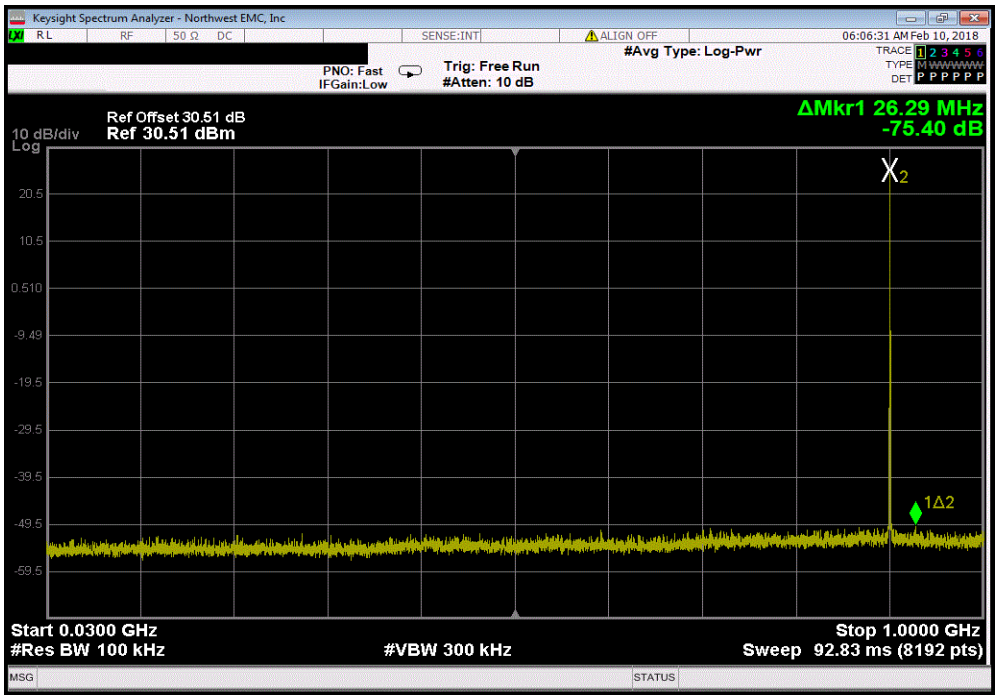
Configuration #	1	Signature

		Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result
PRASK Modulation					
	Antenna Port 4				
	Low Channel 5, 902.75 MHz	30 MHz - 1 GHz	-75.4	-20	Pass
	Low Channel 5, 902.75 MHz	1 GHz - 12.5 GHz	-70.6	-20	Pass
	Mid Channel 30, 915.25 MHz	30 MHz - 1 GHz	-75.17	-20	Pass
	Mid Channel 30, 915.25 MHz	1 GHz - 12.5 GHz	-70.8	-20	Pass
	High Channel 54, 927.25 MHz	30 MHz - 1 GHz	-75.47	-20	Pass
	High Channel 54, 927.25 MHz	1 GHz - 12.5 GHz	-70.48	-20	Pass

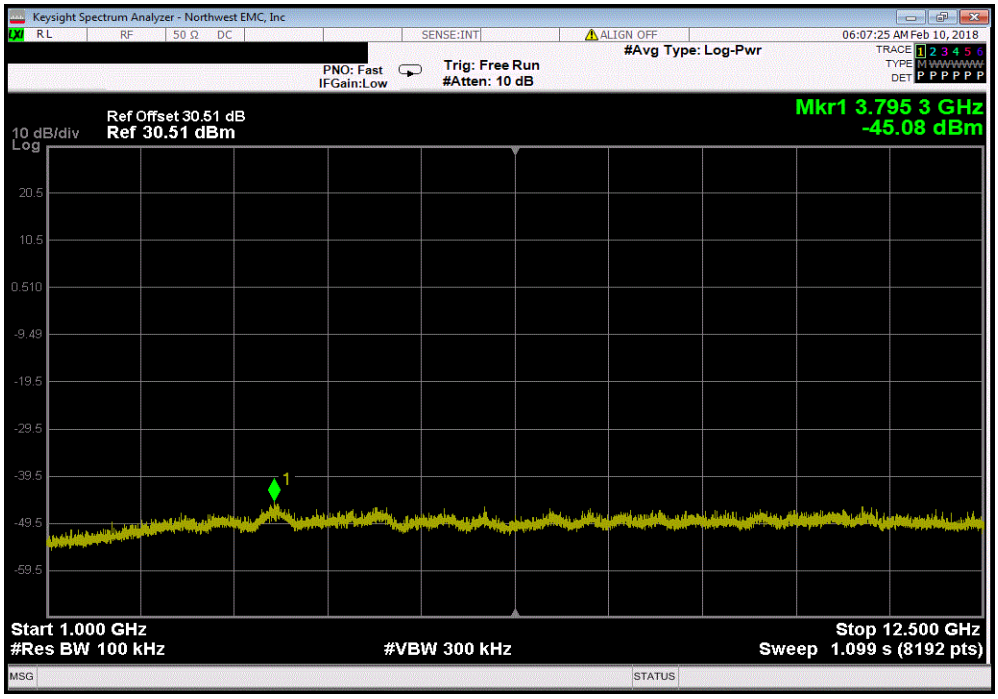
SPURIOUS CONDUCTED EMISSIONS (High Gain Antenna)

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Low Channel 5, 902.75 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	30 MHz - 1 GHz		-75.4	-20	Pass



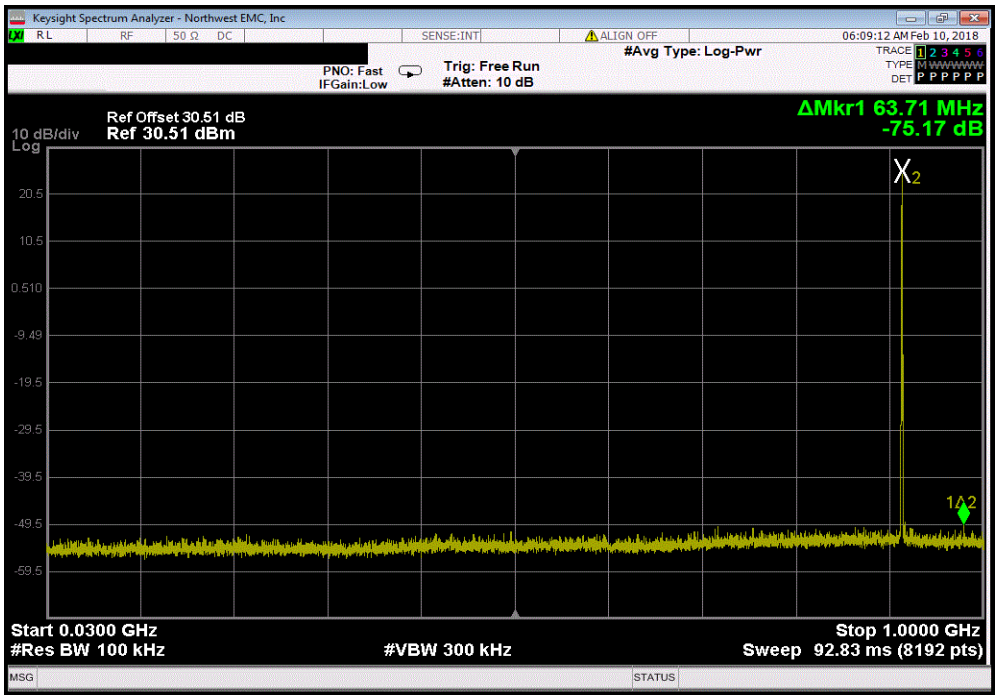
PRASK Modulation, Antenna Port 4, Low Channel 5, 902.75 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
1 GHz - 12.5 GHz		-70.6	-20	Pass



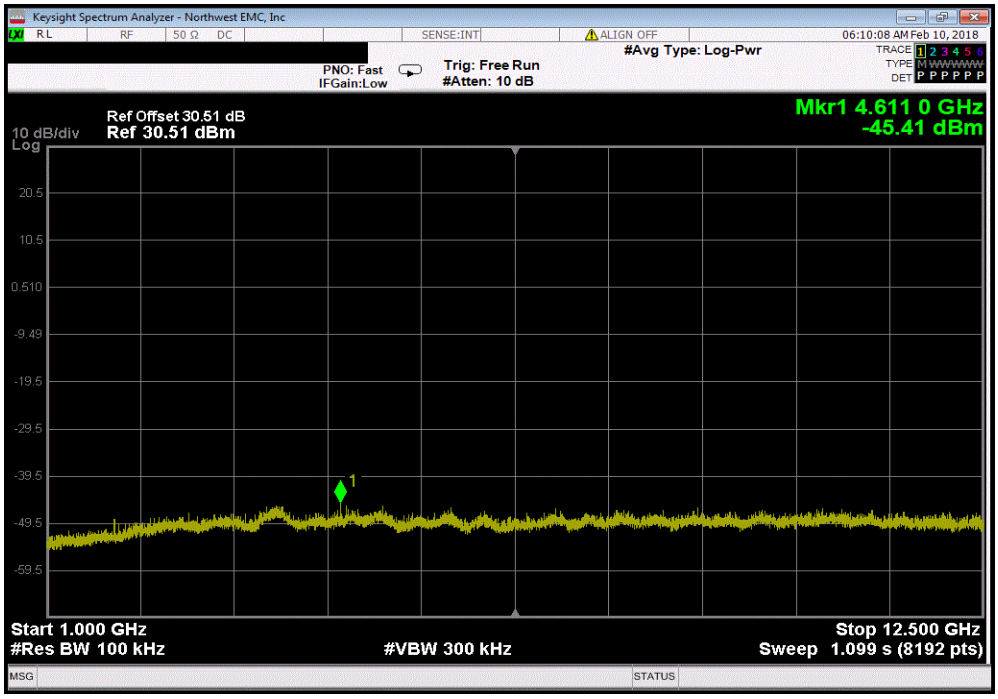
SPURIOUS CONDUCTED EMISSIONS (High Gain Antenna)

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, Mid Channel 30, 915.25 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 1 GHz			-75.17	-20	Pass



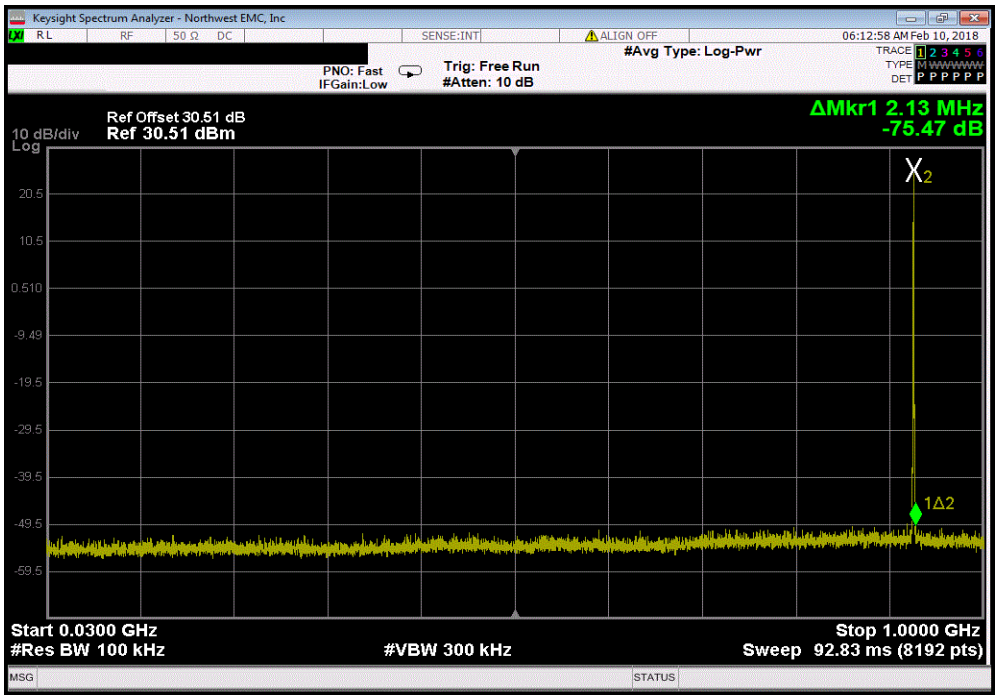
PRASK Modulation, Antenna Port 4, Mid Channel 30, 915.25 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
1 GHz - 12.5 GHz		-70.8	-20	Pass



SPURIOUS CONDUCTED EMISSIONS (High Gain Antenna)

NweTx 2016.09.14.2 XMit 2017.12.13

PRASK Modulation, Antenna Port 4, High Channel 54, 927.25 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	30 MHz - 1 GHz		-75.47	-20	Pass



PRASK Modulation, Antenna Port 4, High Channel 54, 927.25 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
1 GHz - 12.5 GHz			-70.48	-20	Pass